EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-81

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2016	Vulnerability of Human Health
	Base Option Period Number 2	

Contractor: ICF INCORPORATED, L.L.C.

Specify Section and paragraph of Contract SOW: A., A.2.d., A.3., B. B.1.g., C.1., C.4., D., E & F

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 11/12/2015 To 10/31/2016

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (*Max 2*) ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
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Authorized Work Assignment Ceiling

	Contract Period:	Cost/Fee:	LOE:
	11/01/2013 To 10/31/2016		
This Action:			
Total:			

Work Plan / Cost Estimate Approvals

Contractor WP Dated:		Cost/Fee:	LOE:
Cumulative Approved:		Cost/Fee:	LOE:

Work Assignment Manager Name: Janet Gamble (Signature) (Date)	Branch/Mail Code: Phone Number: 703-347-8617 FAX Number:
Project Officer Name: Melissa Revely-Wilson (Signature) (Date)	Branch/Mail Code: Phone Number: 703-347-8523 FAX Number: 703-347-8696
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Adam Meier (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2852 FAX Number: 513-487-2107

PERFORMANCE WORK STATEMENT

Contract # EP-C-14-001

WA Option # 2-81

Title: Mapping the Vulnerability of Human Health to Climate Change in the United States

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PERIOD of PERFORMANCE: 11/12/2015 – 10/31/2016

Specify Section & Paragraph SOW: A., A.2.d., A.3., B. B.1.g., C.1., C.4., D., E & F

I. PURPOSE

The purpose of this work assignment is to provide services to the U.S. Environmental Protection Agency's National Center for Environmental Assessment (NCEA), Global Change Research Program (GCRP) for developing methodologies for mapping the impacts of climate change on the vulnerability of human health and well-being in the U.S. and considering the adaptation strategies that may be supported by vulnerability maps.

II. OBJECTIVES

This project addresses a seemingly modest but complex question: **"**How straightforward is it to map the vulnerability of human health, across a number of factors or dimensions, for the entire United States in a meaningful and self-consistent way (see U.S. EPA, 2011)?"

The overarching objective for this project is to provide public health, public safety, urban planning, emergency response officials and other stakeholders with geospatial methods and maps for identifying and understanding key vulnerabilities, communicating risks to vulnerable populations, and planning and prioritizing location-specific adaptation responses. Other objectives include:

- Identifying and summarizing an array of indicators that may be used to derive vulnerability maps;
- Engaging subject matter experts (SMEs) to identify approaches currently used to assess vulnerability, map health impacts, and prepare location-specific adaptation strategies.

Mapping vulnerability is conceptually and technically demanding. We are exploring key challenges associated with vulnerability mapping, especially the lack of consensus regarding mapping methods and the result that some analytic approaches have, at times, been based on convenience or familiarity as opposed to efficacy, generalizability, and comparability. This project will compile guidance for vulnerability mapping, including:

- Research to identify and evaluate mapping methodologies for understanding vulnerabilities (including, local, regional, and national map overlays) to climate-related stressors and to the interaction with other demographic, socioeconomic and environmental stressors.
- A survey of applications that support information integration for standardizing and mapping spatial data drawn from large health, demographic, land use / land cover, climate data sets, and other important data sources.
- Making the connection between vulnerability mapping and approaches for adaptation, especially addressing opportunities for improved risk communication and targeted emergency response and,
- Determining how uncertainty, model complexity, generalizability, and comparability can be addressed across a range of mapping methodologies.

This project focuses on a "hands on" approach. The intended audience for the vulnerability maps is expected to include professionals engaged in community-based research and adaptation planning, community and urban planners and geographers; land use and transportation planners; public health and safety officials; emergency preparedness and response professionals; environmental health scientists; community organizers; and, other stakeholders, both in and out of government and academia and other non-governmental organizations (NGOs) across national, regional, state and local scales.

III. BACKGROUND

The EPA Global Change Research Program focuses on the impacts of climate change on human health, air quality, water quality, and aquatic ecosystems. Climate impacts include, but are not limited to, increases in warmer and more frequent hot days and nights; increases in excess heat events; increases in heavy precipitation and flooding; increases in areas affected by drought and wildfires; increases in the intensity of tropical storms and storm surge; and sea level rise (Melillo 2014). In addition to climate factors contributing to health outcomes, human health is influenced by non-climate factors, such as economic status, the adoption of new technologies, the condition of the built environment and infrastructure, available human and social capital, political and social institutions, land-use / land-cover changes, demographic trends, accessibility and affordability of health care, and specific health impacts.

Within the United States, climate change is expected to contribute to a range of health impacts for vulnerable populations. The extent and nature of climate change impacts on human health vary by location, by the relative vulnerability of specific population groups, by the extent and duration of exposure to climate change (including, for example, heat and extreme weather events), and by society's ability to adapt to or cope with climate change.

We propose to identify and define methodologies for developing maps and mapping tools that allow for an assessment of the health impacts of climate change on vulnerable populations. Using GIS tools, analysts can develop maps that demonstrate the impacts of climate change, such as extreme weather events, tropical storms, river and coastal flooding, droughts and wildfires, extreme heat, and sea level rise. An index of adaptive capacity (which is a function of factors such as income, life expectancy, educational attainment, literacy, adoption of new technologies, and condition of existing infrastructure) can also be mapped.

Some satellite remote-sensing instruments now have a degree of spatial resolution that allows for finer-scale analyses. High-resolution remote sensing technologies enable the mapping of land cover and land use, and thermal profiles and can be integrated, through the use of Geographic Information Systems (GIS), with indicators of social vulnerability such as demographic trends, income, measures of economic productivity, condition of housing stocks, extent of air-conditioning usage, access to and the condition of transportation infrastructure, and accessible and affordable health care services. The refinement of mapping techniques may mean that emergency personnel will improve their response to extreme events and allow better resource allocation and tailoring of communications and adaptation strategies for vulnerable populations in at-risk locations.

Prior to the initiation of this WA, EPA staff will review the draft findings from a literature review conducted as part of the US Global Change Research Program's Climate Health Assessment to identify projects, reports, or indicators, focused on mapping vulnerability of human health to climate change. EPA staff is developing a survey of vulnerability mapping projects that introduces a conceptual framework that defines vulnerability mapping and highlights mapping studies for which data sources may be available. Existing or planned projects that employ mapping methodologies will incorporate a variety of materials, including: peer reviewed journals, grey literature, conference proceedings and reports, NGO and Government reports, and information describing existing vulnerability mapping projects, and health indicators.

The USGCRP Climate Health Assessment includes a chapter on Populations of Concern that addresses health impacts and vulnerability mapping across population groups. In addition, the EPA Staff has begun to identify and classify vulnerability mapping projects with information that includes: contact person(s) and contact information; location and scale of project; vulnerability indicators used; data sources and their availability, utility and reliability; methodologies used for developing map overlays; types of spatial-analytic techniques employed; approaches for disseminating maps and creating visualization of risks; and, lessons learned from each mapping project.

IV. INTENDED AUDIENCE and UTILIZATION of PROJECT PRODUCTS.

The intended audience/user for this project's outputs is the Office of Air and Radiation (OAR) Climate Change Division (CCD) and partners from the Sustainable and Healthy Communities (SHC) National Program at EPA/ORD and outside public health researchers, practitioners, and policy planners. Representatives from these audiences may be invited to participate in the one-on-one interviews and the experts' technical working group meeting. Other EPA Program and Regional Offices are expected to utilize the report and its mapping methodologies and analyses to understand the vulnerability of populations to the health impacts associated with climate change based on geographic location. We will seek input from federal agencies represented in the membership of the USGCRP's Climate Change and Human Health Working Group (CCHHG). We anticipate opportunities to present this project to and seek engagement from federal partners in the CCHHG. Nine or fewer subject matter experts will be identified by the CCHHG and by other federal, state, and local mapping experts from within and outside of government.

V. REQUIRED CONTRACTOR QUALIFICATIONS.

The Contractor shall provide multidisciplinary professional expertise in assessing the impacts of climate change on human health and human well-being, especially related to developing best practices for applying geo-spatial mapping techniques to assess the vulnerability of specific locations/populations to the human health impacts of climate change. Expertise related to vulnerability mapping and public health adaptation strategies that address climate change impacts is required. In addition, experience is required in preparing technical reports consistent with the standards of the peer-reviewed literature. The proposed scientific and technical authors shall be recognized in their fields, and they shall have the general knowledge, as well as the specific knowledge, expertise, or experience, specified in the work assignment. The selected authors/consultants must have experience that includes authoring journal articles or other technical documents that specifically relate to this topic.

VI. STATEMENT of WORK.

Task 1: Establish Communication, Prepare Work Plan, Cost Estimate, and Quality Assurance Statement

Within 3 days of start date of this WA, the Contractor shall schedule a conference call (not to exceed 1 hour) with the WAM and appropriate contractor staff to clarify outstanding questions and confirm the schedule and specific tasks. The Contractor shall prepare and submit a work plan describing the project schedule, staffing, and hours required for completion of each task described in the Work Assignment, as well as an overall cost estimate for the work plan.

The contractor shall develop a quality assurance statement for this work assignment for the Work Assignment Manager's (WAM) and QA manager approval. The work plan and the quality assurance (QA) statement shall be submitted simultaneously for the WAM's approval. The contractor shall not perform any work under this work assignment until the quality assurance statement is reviewed and approved by the WAM and QA Manager. The contractor must address in the quality assurance statement how existing data will be considered

for the work assignment. Existing data is defined as the use of environmental or health data that was developed for a different purpose. This includes data used from citations found in the peer-reviewed scientific literature.

The contractor shall evaluate the work assignment and the materials provided by the EPA WAM and prepare the QA plan and the work plan and cost estimates within 2 weeks after the receipt of the work assignment.

Deliverable 1.1. Initial Conference Call – to clarify outstanding questions and confirm the schedule and specific tasks **within 3 days of work assignment award, not to exceed 1 hour**

Deliverable 1.2. The Contractor shall prepare and submit a work plan and QA statement describing the project schedule, staffing, hours and QA activities required for completion of each task described in the Work Assignment, as well as an overall cost estimate for the work plan, **in accordance with the contract.**

Task 2: Routine and ongoing communication activities.

Within 1 week after the approval of the work plan, the contractor shall meet with the EPA WAM for discussion regarding the scope and conduct of the work plan and to address any questions or need for clarification or elaboration. The Contractor shall take brief minutes at this and subsequent meetings and teleconference calls and provide those minutes, including any action items, to the WAM **within 2 business days after a meeting or a call**.

In collaboration with the WAM, the Contractor shall establish a schedule for regular progress reports, project meetings, and other communications throughout the period of performance of this WA. It is estimated that this WA will require regular meetings and/or conference calls with the WAM and appropriate Contractor staff. Throughout the course of the Work Plan, the Contractor shall inform the WAM of any developments that affect the conduct of the project or the schedule. All deliverables shall be sent electronically to the WAM.

Deliverable 2.1. Project Meeting. The Contractor shall schedule a kick-off meeting with the WAM to address the timeline for the PWS, the scope and conduct of the work plan and to address any questions or need for clarification or elaboration, within one week following the WAM's approval of the Work Plan.

Deliverable 2.2. Progress Reports. The Contractor shall provide brief, written progress reports to the WAM. This deliverable is due **by email to the WAM by the 20th of each month as mandated by the contract** for the duration of the Work Plan.

Deliverable 2.3. Routine Communications / Meetings. Project meetings and other communications, including updates via conference calls, are scheduled as required by the WAM or at the request of the Contractor for the duration of the work assignment. Brief meeting minutes, including action items, shall be prepared by the Contractor and emailed to the WAM within **2 business days following all project meetings or conference calls**.

Task 3: One-on-one interviews with subject matter experts.

A Technical Working Group (TWG) that includes 9 or fewer subject matter experts (SMEs) will be identified and recruited by the Contractor. The SMEs will be drawn from across federal, state, and local governments and from among other persons with expertise in vulnerability mapping and human health-related climate change impacts and assessments of spatially-resolved impacts of climate change. One-on-one interviews with the SMEs

(to be conducted by conference call) are designed to retrieve information about existing methodologies and data sources for mapping vulnerability to climate change, the use of maps to identify vulnerable populations, the use of maps to inform adaptation planning and implementation, and other mapping methodology to visualize vulnerability of human health to climate change. Discussion points used to guide these interviews shall be prepared by the Contractor in consultation with the WAM. The contractor shall compile Consultation Notes detailing each of the individual interview's responses. These Consultation Notes are due within 2 weeks after the completion of Deliverable 3.3 (the one-on-one interviews).

Deliverable 3.1: The Contractor shall identify and recruit 9 or fewer subject matter experts (SMEs) with whom one-on-one interviews will be conducted. One option for identifying SMEs is through engagement of the members of the US Global Change Research Program's Climate Change and Human Health Working Group (CCHHG). The Contractor, with input from the WAM, will prepare a PowerPoint presentation for the CCHHG summarizing this project and emphasizing the importance of engaging SMEs in a series of one-on-one interviews. **A "recruitment" presentation to the CCHHG will be scheduled within 2-4 weeks of completion of the Task 2**. Other SMEs may be identified by the Contractor through other approaches. The Contractor shall report to the WAM the names and affiliations of the SMEs identified in this deliverable within 2 weeks of the initiation of this Task 3.

Deliverable 3.2: The Contractor shall prepare Discussion Points for guiding the one-on-one Interviews with the SMEs. These discussion points will be prepared by the Contractor **within 2 weeks after the completion of Task 2**. The Contractor shall provide these Discussion Points to the WAM for review and approval.

Deliverable 3.3: Conduct the one-on-one interviews with SMEs that will retrieve information about existing methodologies and data sources for mapping vulnerability to climate change. These expert interviews will be conducted **over a period of 4 weeks by the Contractor after the preparation of Deliverable 3.2** (the Discussion Points).

Deliverable 3.4: Preparation of Consultation Summary. Following the one-on-one interviews, the Contractor shall prepare a summary of responses to the interviews. This written summary entitled "Consultation Summary" is **due within 2 weeks after the completion of Deliverable 3.3**.

Task 4: Workshop of the Technical Working Group (TWG).
The Contractor shall convene a one-day workshop with the group of subject matter experts interviewed in Task 3. This Technical Working Group (with the 9 or fewer SMEs by invitation only) will convene at the EPA Arlington VA Potomac Yard conference facilities to respond to the initial Consultation Summary (Task 3.4) and the survey of exemplary vulnerability mapping projects (*prepared off line by EPA staff*).

Contractor support shall include recruiting SMEs; securing facilities and equipment for meetings; serving as coordinator and facilitator of meetings; providing documents for review, developing written material for meetings; and preparing summary reports.

The logistical arrangements for the meeting will be provided for by the Contractor. Invitations to include the 9 or fewer SMEs and the WAM and representatives of the Climate Change Division of the OAR and others as identified by the Contractor and reviewed by the WAM will be invited.

The purpose of this meeting is to ask the SMEs to review and respond to an initial Consultation Summary by supplying additional content, organizational suggestions for the overall document, and relevant references or information regarding existing or planned mapping projects, available data sources, and associated approaches to spatial analyses.

The Contractor shall make extensive notes of the workshop proceedings. The Contractor shall use the TWG meeting notes to populate a draft summary (See Task 5).

Deliverable 4.1. Meeting preparations for TWG. The Contractor shall make arrangements for the TWG meeting including arranging for meeting space in Potomac Yard (Arlington VA) and for the participation (by invitation only) of 9 or fewer subject matter experts and others to be identified as participants per approval by the WAM.

Deliverable 4.2. Meeting notes at Meeting of the TWG. The Contractor shall attend the TWG meeting and make a detailed record of the discussions.

Deliverable 4.3. Use TWG meeting notes to update and identify additional data sources and vulnerability mapping approaches. The meeting notes should highlight key discussions at the TWG meeting and should contribute to an update and a survey of existing mapping projects. **All vulnerability mapping updates shall be submitted to the WAM by the Contractor within 2 weeks after the date of the TWG meeting**.

Task 5: A draft summary shall be prepared by the contractor. The summary shall utilize the findings from the one-on-one interviews and the TWG Workshop to identify and collect information on climate projections, spatially-resolved data on human health impacts, demographic and other socioeconomic data, land-use/ land-cover data to facilitate a comparison across locations, and appropriate climate stressor mapping overlays. This summary shall organize, examine and consolidate various vulnerability metrics to evaluate variability in health impacts based on a local-to-national-scale aggregation of relevant vulnerability indices.

Task 5.1: A draft summary shall be prepared by the Contractor. The anticipated submission date is **FY 2016 Q4.**

VII. DELIVERABLE TIMELINE

Task	*Description*	*Deliverable Timeline*
TASK 1	**Work plan, cost estimate, and quality assurance**	
1.1	Initial conference call	Within 3 days from the receipt of the PWS
1.2	Preparation of the work plan and cost estimate and QA Statement	In accordance with the contract.
TASK 2	**Establish communications**	
2.1	Project meeting: Project Kick-off Meeting with Contractor and WAM	Within 1 week of the WAM's approval of the Work Plan
2.2	Progress reports: Contractor provides progress reports to the WAM by email each month for the duration of the WA	By the 20th of each month as provided by the PWS
2.3	Other routine communications and meetings	As needed per the request of the Contractor or of the WAM
TASK 3	**One-on-one interviews with subject matters experts (SMEs)**	
3.1	Identify and recruit 9 or fewer SMEs	Contractor to provide presentation to the CCHHG to recruit SMEs from within the USGCRP, and others as identified by a review of vulnerability mapping studies conducted by EPA staff (off-line). Two weeks are allotted to identify and recruit SMEs
3.2	Prepare discussion points for use in guiding the one-on-one interviews.	Contractor develops Discussion Points in consultation with the WAM within 2 weeks from initiation of Task 3

3.3	Contractor to conduct one-on-one interviews (via conference calls) with 9 or fewer SMEs	Within 4 weeks following the completion of Task 3.2
3.4	The Contractor shall prepare Consultation Notes that summarize and highlight key discussions and identify spatially-resolved vulnerability data and other GIS tools identified through the SMEs interviews	Consultation Notes prepared and submitted to the WAM within 2 weeks after the completion of the one-on-one interviews with the SMEs.
Task 4	**Workshop of the Technical Working Group (TWG).**	
4.1	Meeting preparations for the TWG Workshop	Within 4 weeks of the completion of the Task 3.4
4.2	Contractor to document Workshop discussions and use as an update to the draft Consultation Notes (from Task 3)	Within 3 weeks after the approval of the revised outline by the WAM
4.3	Use TWG to update and identify additional data sources and vulnerability mapping approaches. The meeting notes should highlight key discussions at the TWG meeting and should contribute to an update of existing mapping projects.	All vulnerability mapping updates shall be submitted by the Contractor within 2 weeks after the date of the TWG Workshop.
Task 5	**A draft summary shall be prepared**	
5.1	Contractor prepares a draft summary to evaluate health impacts based on a local-to-national-scale aggregation of relevant vulnerability indicators. The paper shall summarize the one-on-one interviews and the TWG Workshop to identify and collect climate projections, spatially-resolved data on human health impacts, demographic and other socioeconomic data, land-use/ land-cover data to facilitate a comparison across locations, and appropriate climate stressor mapping overlays.	Anticipated date for completion is FY 2016 Q4

VIII. MANAGEMENT CONTROLS

1. All deliverables shall be reviewed for conformance to the requirements of this work assignment before being approved as final.

2. The contractor shall comply with other applicable requirements for final work assignment reports stipulated in contract.

IX. NOTICE REGARDING GUIDANCE PROVIDED UNDER THIS PROJECT

Guidance is strictly limited to technical and analytical support. The contractor shall not engage in activities of an inherent governmental nature such as the following:

(1) Formulation of Agency policy
(2) Selection of Agency priorities
(3) Development of Agency regulations

Should the contractor receive any instruction from an EPA staff person that the contractor ascertains to fall into any of these categories or goes beyond the scope of the contract or work assignment, the contractor shall immediately contact the PO, WAM or CO.

X. SPECIAL CONDITIONS AND ASSUMPTIONS

The contractor shall hold a conference call with the EPA WAM at the initiation of the work assignment, and shall provide a bi-weekly update to the WAM by telephone for the duration of the work assignment, in addition to the standard reporting requirements of the contract.

XI. EPA CONTACT INFORMATION

Copies of all correspondence pertaining to the performance of this work assignment shall be sent to the WAM.

Work Assignment Manager (WAM):

Janet L Gamble, PhD
Telephone: 703-347-8617
FAX: 703-347-8694
Email: gamble.janet@epa.gov
Postal Address: 1200 Pennsylvania Ave, NW; Mailcode 8601P; Washington, DC 20460
Physical Address: USEPA; Two Potomac Yard (North) # N7825; 2733 South Crystal Dr, Arlington, VA 22202

Alternate Work Assignment Manager (WAM):

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XII. SELECTED REFERENCES

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Contract Period: 11/01/2013 To 10/31/2016	$0.00	0
This Action:	$29,955.00	237
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Work Assignment Manager Name: Janet Gamble (Signature) (Date)	Branch/Mail Code: Phone Number: 703-347-8617 FAX Number:
Project Officer Name: Melissa Revely-Wilson (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-0207 FAX Number:
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Adam Meier (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2852 FAX Number: 513-487-2107

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Contractor	Specify Section and paragraph of Contract SOW
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Purpose:
- ☐ Work Assignment
- ☒ Work Assignment Amendment
- ☐ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 11/12/2015 To 10/31/2016

Comments:

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2) ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period: 11/01/2013 To 10/31/2016 — Cost/Fee: — LOE:

This Action:

Total:

Work Plan / Cost Estimate Approvals

Contractor WP Dated: — Cost/Fee: — LOE:

Cumulative Approved: — Cost/Fee: — LOE:

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PERFORMANCE WORK STATEMENT

Contract # EP-C-14-001

WA Option # 2-81 Amend 1

Title: Mapping the Vulnerability of Human Health to Climate Change in the United States

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PERIOD of PERFORMANCE: 11/01/2015 – 10/31/2016

Specify Section & Paragraph SOW: A., A.2.d., A.3., B. B.1.g., C.1., C.4., D., E & F

I. PURPOSE

The purpose of this work assignment is to provide services to the U.S. Environmental Protection Agency's National Center for Environmental Assessment (NCEA), Global Change Research Program (GCRP) for developing methodologies for mapping the impacts of climate change on the vulnerability of human health and well-being in the U.S. and considering the adaptation strategies that may be supported by vulnerability maps.

II. OBJECTIVES

This project addresses a seemingly modest but complex question: **"**How straightforward is it to map the vulnerability of human health, across a number of factors or dimensions, for the entire United States in a meaningful and self-consistent way (see U.S. EPA, 2011)?"

The overarching objective for this project is to provide public health, public safety, urban planning, emergency response officials and other stakeholders with geospatial methods and maps for identifying and understanding key vulnerabilities, communicating risks to vulnerable populations, and planning and prioritizing location-specific adaptation responses. Other objectives include:

- Identifying and summarizing an array of indicators that may be used to derive vulnerability maps;
- Engaging subject matter experts (SMEs) to identify approaches currently used to assess vulnerability, map health impacts, and prepare location-specific adaptation strategies.

Mapping vulnerability is conceptually and technically demanding. We are exploring key challenges associated with vulnerability mapping, especially the lack of consensus regarding mapping methods and the result that some analytic approaches have, at times, been based on convenience or familiarity as opposed to efficacy, generalizability, and comparability. This project will compile guidance for vulnerability mapping, including:

- Research to identify and evaluate mapping methodologies for understanding vulnerabilities (including, local, regional, and national map overlays) to climate-related stressors and to the interaction with other demographic, socioeconomic and environmental stressors.
- A survey of applications that support information integration for standardizing and mapping spatial data drawn from large health, demographic, land use / land cover, climate data sets, and other important data sources.
- Making the connection between vulnerability mapping and approaches for adaptation, especially addressing opportunities for improved risk communication and targeted emergency response and,
- Determining how uncertainty, model complexity, generalizability, and comparability can be addressed across a range of mapping methodologies.

This project focuses on a "hands on" approach. The intended audience for the vulnerability maps is expected to include professionals engaged in community-based research and adaptation planning, community and

urban planners and geographers; land use and transportation planners; public health and safety officials; emergency preparedness and response professionals; environmental health scientists; community organizers; and, other stakeholders, both in and out of government and academia and other non-governmental organizations (NGOs) across national, regional, state and local scales.

III. BACKGROUND

The EPA Global Change Research Program focuses on the impacts of climate change on human health, air quality, water quality, and aquatic ecosystems. Climate impacts include, but are not limited to, increases in warmer and more frequent hot days and nights; increases in excess heat events; increases in heavy precipitation and flooding; increases in areas affected by drought and wildfires; increases in the intensity of tropical storms and storm surge; and sea level rise (Melillo 2014). In addition to climate factors contributing to health outcomes, human health is influenced by non-climate factors, such as economic status, the adoption of new technologies, the condition of the built environment and infrastructure, available human and social capital, political and social institutions, land-use / land-cover changes, demographic trends, accessibility and affordability of health care, and specific health impacts.

Within the United States, climate change is expected to contribute to a range of health impacts for vulnerable populations. The extent and nature of climate change impacts on human health vary by location, by the relative vulnerability of specific population groups, by the extent and duration of exposure to climate change (including, for example, heat and extreme weather events), and by society's ability to adapt to or cope with climate change.

We propose to identify and define methodologies for developing maps and mapping tools that allow for an assessment of the health impacts of climate change on vulnerable populations. Using GIS tools, analysts can develop maps that demonstrate the impacts of climate change, such as extreme weather events, tropical storms, river and coastal flooding, droughts and wildfires, extreme heat, and sea level rise. An index of adaptive capacity (which is a function of factors such as income, life expectancy, educational attainment, literacy, adoption of new technologies, and condition of existing infrastructure) can also be mapped.

Some satellite remote-sensing instruments now have a degree of spatial resolution that allows for finer-scale analyses. High-resolution remote sensing technologies enable the mapping of land cover and land use, and thermal profiles and can be integrated, through the use of Geographic Information Systems (GIS), with indicators of social vulnerability such as demographic trends, income, measures of economic productivity, condition of housing stocks, extent of air-conditioning usage, access to and the condition of transportation infrastructure, and accessible and affordable health care services. The refinement of mapping techniques may mean that emergency personnel will improve their response to extreme events and allow better resource allocation and tailoring of communications and adaptation strategies for vulnerable populations in at-risk locations.

Prior to the initiation of this WA, EPA staff will review the draft findings from a literature review conducted as part of the US Global Change Research Program's Climate Health Assessment to identify projects, reports, or indicators, focused on mapping vulnerability of human health to climate change. EPA staff is developing a survey of vulnerability mapping projects that introduces a conceptual framework that defines vulnerability mapping and highlights mapping studies for which data sources may be available. Existing or planned projects that employ mapping methodologies will incorporate a variety of materials, including: peer reviewed journals, grey literature, conference proceedings and reports, NGO and Government reports, and information describing existing vulnerability mapping projects, and health indicators.

The USGCRP Climate Health Assessment includes a chapter on Populations of Concern that addresses health impacts and vulnerability mapping across population groups. In addition, the EPA Staff has begun to identify

and classify vulnerability mapping projects with information that includes: contact person(s) and contact information; location and scale of project; vulnerability indicators used; data sources and their availability, utility and reliability; methodologies used for developing map overlays; types of spatial-analytic techniques employed; approaches for disseminating maps and creating visualization of risks; and, lessons learned from each mapping project.

IV. INTENDED AUDIENCE and UTILIZATION of PROJECT PRODUCTS.

The intended audience/user for this project's outputs is the Office of Air and Radiation (OAR) Climate Change Division (CCD) and partners from the Sustainable and Healthy Communities (SHC) National Program at EPA/ORD and outside public health researchers, practitioners, and policy planners. Representatives from these audiences may be invited to participate in the one-on-one interviews and the experts' technical working group meeting. Other EPA Program and Regional Offices are expected to utilize the report and its mapping methodologies and analyses to understand the vulnerability of populations to the health impacts associated with climate change based on geographic location. We will seek input from federal agencies represented in the membership of the USGCRP's Climate Change and Human Health Working Group (CCHHG). We anticipate opportunities to present this project to and seek engagement from federal partners in the CCHHG. Nine or fewer subject matter experts will be identified by the CCHHG and by other federal, state, and local mapping experts from within and outside of government.

V. REQUIRED CONTRACTOR QUALIFICATIONS.

The Contractor shall provide multidisciplinary professional expertise in assessing the impacts of climate change on human health and human well-being, especially related to developing best practices for applying geo-spatial mapping techniques to assess the vulnerability of specific locations/populations to the human health impacts of climate change. Expertise related to vulnerability mapping and public health adaptation strategies that address climate change impacts is required. In addition, experience is required in preparing technical reports consistent with the standards of the peer-reviewed literature. The proposed scientific and technical authors shall be recognized in their fields, and they shall have the general knowledge, as well as the specific knowledge, expertise, or experience, specified in the work assignment. The selected authors/consultants must have experience that includes authoring journal articles or other technical documents that specifically relate to this topic.

VI. STATEMENT of WORK.

Task 1: Establish Communication, Prepare Work Plan, Cost Estimate, and Quality Assurance Statement

Within 3 days of start date of this WA, the Contractor shall schedule a conference call (not to exceed 1 hour) with the WAM and appropriate contractor staff to clarify outstanding questions and confirm the schedule and specific tasks. The Contractor shall prepare and submit a work plan describing the project schedule, staffing, and hours required for completion of each task described in the Work Assignment, as well as an overall cost estimate for the Work Plan.

The contractor shall develop a quality assurance statement for this work assignment for the Work Assignment Manager's (WAM) and QA manager approval. The work plan and the quality assurance (QA) statement shall be submitted simultaneously for the WAM's approval. The contractor shall not perform any work under this work assignment until the quality assurance statement is reviewed and approved by the WAM and QA Manager. The contractor must address in the quality assurance statement how existing data will be considered for the work assignment. Existing data is defined as the use of environmental or health data that was developed for a different purpose. This includes data used from citations found in the peer-reviewed scientific literature.

The contractor shall evaluate the work assignment and the materials provided by the EPA WAM and prepare the QA plan and the work plan and cost estimates within 2 weeks after the receipt of this amended work assignment.

Deliverable 1.1. Initial Conference Call – to clarify outstanding questions and confirm the schedule and specific tasks **within 3 days of work assignment award, not to exceed 1 hour.**

Deliverable 1.2. The Contractor shall prepare and submit an amended work plan describing the project schedule, staffing, hours and QA activities (the QA Statement has already been received) required for completion of each task described in the amended Work Assignment, as well as an overall cost estimate for the work plan, **within 2 weeks from the Contractor's receipt of the amended WA.**

Task 2: Routine and ongoing communication activities.

Within 1 week after the approval of the amended work plan, the contractor shall meet with the EPA WAM for discussion regarding the scope and conduct of the work plan and to address any questions or need for clarification or elaboration. The Contractor shall take brief minutes at this and subsequent meetings and teleconference calls and provide those minutes, including any action items, to the WAM **within 2 business days after a meeting or a call**.

In collaboration with the WAM, the Contractor shall establish a schedule for regular progress reports, project meetings, and other communications throughout the period of performance of this WA. It is estimated that this WA will require regular meetings and/or conference calls with the WAM and appropriate Contractor staff. Throughout the course of the Work Plan, the Contractor shall inform the WAM of any developments that affect the conduct of the project or the schedule. All deliverables shall be sent electronically to the WAM.

Deliverable 2.1. Project Meeting. The Contractor shall schedule a meeting with the WAM to address the timeline for the amended WA, the scope and conduct of the work plan and to address any questions or need for clarification or elaboration, within one week following the WAM's review of the amended Work Plan.

Deliverable 2.2. Progress Reports. The Contractor shall provide brief, written progress reports to the WAM. This deliverable is due **by email to the WAM by the 20th of each month as mandated by the contract** for the duration of the Work Plan.

Deliverable 2.3. Routine Communications / Meetings. Project meetings and other communications, including updates via conference calls, are scheduled as required by the WAM or at the request of the Contractor for the duration of the work assignment. Brief meeting minutes, including action items, shall be prepared by the Contractor and emailed to the WAM within **2 business days following all project meetings or conference calls**.

Task 3: One-on-one interviews with subject matter experts.

A Technical Working Group (TWG) that includes 9 or fewer subject matter experts (SMEs) and others who will be identified and recruited by the Contractor. The SMEs will be drawn from across federal, state, and local governments and from among other persons in academia and in non-governmental organizations with expertise in vulnerability mapping and human health-related climate change impacts and assessments of spatially-resolved impacts of climate change. It is anticipated that the identification and recruitment of SMEs may be particularly time consuming. The Contractor is encouraged to budget for that process. Given that there is no

budget for travel nor for honorarium in this Work Assignment, the SMEs will have to be willing to participate at their own cost. This may occasion additional time to be budgeted for recruiting a full complement of SMEs.

One-on-one interviews with the SMEs (to be conducted by conference call facilitated by the Contractor and attended by the WAM) are designed to retrieve information about existing methodologies and data sources for mapping vulnerability to climate change, the use of maps to identify vulnerable populations, the use of maps to inform adaptation planning and implementation, and other mapping methodology to visualize vulnerability of human health to climate change. It is expected that the interviews should be **scheduled for a one to two hour time period** for each interviewee.

Discussion Points used to provide a guide for the SME one-on-one interviews shall be prepared prior to the interviews by the Contractor in consultation with the WAM. Once agreed upon, these Discussion Points shall be provided to the SMEs within 2 weeks prior to the time of their scheduled interview.

The Contractor shall prepare and compile comprehensive **Consultation Notes** detailing each of the individual interviewee's responses. It is expected that the SMEs may also provide data and other resources that will be important to include in the Consultation Notes. The Consultation Notes and SME-identified supplemental materials are due to the WAM within 2 weeks after the completion of the one-on-one interviews.

> **Deliverable 3.1: The Contractor shall identify and recruit 9 or fewer subject matter experts (SMEs) with whom one-on-one interviews will be conducted**. One option for identifying SMEs is through engagement of the members of the US Global Change Research Program's Climate Change and Human Health Working Group (CCHHG). The Contractor, with input from the WAM, **will prepare a PowerPoint presentation for the CCHHG** summarizing this project and emphasizing the importance of engaging SMEs in a series of one-on-one interviews. **A "recruitment" presentation to the CCHHG will be scheduled within 2-4 weeks of completion of the Task 2**. Other SMEs may be identified by the Contractor through other approaches (described above). **The Contractor shall report to the WAM the names and affiliations of the SMEs and provide a current curriculum vitae for each** within 2 weeks of the initiation of Task 3.
>
> **Deliverable 3.2: The Contractor, with input from the WAM, shall prepare draft Discussion Points for organizing and guiding the one-on-one interviews with the SMEs.** These Discussion Points will be prepared **within 2 weeks after the completion of Task 2**. The Contractor shall provide these Discussion Points to the WAM for final approval.
>
> **Deliverable 3.3: Conduct the one-on-one interviews with SMEs** that will retrieve information about existing methodologies and data sources for mapping vulnerability to climate change. These expert interviews will be conducted **over a period of 4 weeks by the Contractor after the preparation of** the Discussion Points.
>
> **Deliverable 3.4: Preparation of Consultation Notes.** Following the one-on-one interviews, the Contractor shall prepare a comprehensive summary of responses to the interviews as well as any supplemental materials provided by the SMEs. The compiled **Consultation Notes are due within 2 weeks after the completion of the interviews in Deliverable 3.3** and will be utilized by participants at the TWG meeting.

Task 4: Workshop of the Technical Working Group (TWG).

The Contractor shall convene a one-day workshop with the group of subject matter experts interviewed in Task 3. This Technical Working Group (with the 9 or fewer SMEs and with other participants identified by the WAM and the Contractor) will be by invitation only. We expect a total of no more than 18-20 participants for

the TWG. The TWG will be held at the EPA Arlington VA Potomac Yard conference facilities. The TWG will respond to the initial Consultation Notes (Task 3.4) as well as to a draft survey of exemplary vulnerability mapping projects in the U.S. (*this survey of existing studies is being prepared off line by EPA staff and will be provided to the contractor as an additional material resource for the TWG*).

The logistical arrangements for the TWG meeting will be provided for by the Contractor. Contractor support shall include recruiting TWG participants; serving as coordinator and facilitator of meetings; providing documents for review, and developing written material for distribution to the SMEs prior to the TWG. Invitations will include the 9 or fewer SMEs, the WAM and others as identified by the Contractor and reviewed by the WAM. The WAM will arrange for meeting facilities and A/V equipment at the Potomac Yard conference facilities.

The purpose of this meeting is to ask the SMEs to review and respond to the draft Consultation Notes by supplying additional content, organizational suggestions for an overall Summary Report, and relevant references or information regarding existing or planned mapping projects, available data (including spatial data), and associated methodologies related to the conduct of the spatial analyses of human health vulnerability.

The Contractor shall make **extensive notes** of the workshop proceedings. The Contractor shall use the TWG meeting notes to populate a draft Summary Report in Task 5.

> **Deliverable 4.1. Meeting preparations for TWG.** The Contractor shall make arrangements for the TWG meeting including arranging for meeting space in Potomac Yard (Arlington VA) and for the participation (by invitation only) of 9 or fewer subject matter experts and others to be identified as participants per approval by the WAM.
>
> **Deliverable 4.2. Meeting notes at Meeting of the TWG.** The Contractor shall attend and facilitate the TWG meeting and make a detailed record of the discussions and collect other materials provided by the SMEs and other participants.
>
> **Deliverable 4.3. Use TWG meeting notes to update and identify additional data sources and vulnerability mapping methodologies.** The meeting notes should highlight key discussions at the TWG meeting and should contribute to a survey of existing mapping projects. **A record of all TWG deliberations shall be submitted to the WAM by the Contractor within 3 weeks after the date of the TWG meeting**.

Task 5: A Summary Report shall be prepared by the contractor. The Summary Report shall utilize the findings from the one-on-one interviews and the proceedings of the TWG Workshop to identify and retrieve information on climate projections, spatially-resolved data on human health impacts, demographic and other socioeconomic data, land-use/ land-cover data to facilitate a comparison across locations, and a discussion of examples of appropriate climate mapping overlays as suggested by the WAM. This summary shall organize, examine and consolidate various vulnerability metrics to evaluate variability in health impacts based on a local-to-national-scale aggregation of relevant vulnerability indices.

> **Deliverable 5.1: An internal review draft (IRD) Summary Report shall be prepared** by the Contractor. The WAM will review the draft summary report and provide comments to the contractor. The contractor will prepare a **response to the WAM's comments in a separate spreadsheet and prepare the external review draft (ERD) based on the contractor's response to internal comments**. The anticipated submission date for the External Review Draft is **FY 2016 Q4.**

VII. DELIVERABLE TIMELINE

Task	*Description*	*Deliverable Timeline*
TASK 1	**Work plan, cost estimate, and quality assurance**	
1.1	Initial conference call	Within 3 days from the receipt of the PWS
1.2	Preparation of the work plan and cost estimate and QA Statement	Within 2 weeks of the receipt of the WA
TASK 2	**Establish communications**	
2.1	Project meeting: Project Kick-off Meeting with Contractor and WAM	Within 1 week of the WAM's approval of the Work Plan
2.2	Progress reports: Contractor provides progress reports to the WAM by email each month for the duration of the WA	By the 20th of each month as provided by the PWS
2.3	Other routine communications and meetings	As needed per the request of the Contractor or of the WAM
TASK 3	**One-on-one interviews with subject matters experts (SMEs)**	
3.1	Identify and recruit 9 or fewer SMEs	Contractor to provide presentation to the CCHHG to recruit SMEs from within the USGCRP, and others as identified by a review of vulnerability mapping studies conducted by EPA staff (off-line). Two weeks are allotted to identify and recruit SMEs
3.2	Prepare discussion points for use in guiding the one-on-one interviews.	Contractor develops Discussion Points in consultation with the WAM within 2 weeks from initiation of Task 3
3.3	Contractor to conduct one-on-one interviews (via conference calls) with 9 or fewer SMEs	Within 4 weeks following the completion of Task 3.2
3.4	The Contractor shall prepare Consultation Notes that summarize and highlight key discussions and identify spatially-resolved vulnerability data and other GIS tools identified through the SMEs interviews	Consultation Notes prepared and submitted to the WAM within 2 weeks after the completion of the one-on-one interviews with the SMEs.
Task 4	**Workshop of the Technical Working Group**	
4.1	Meeting preparations for the TWG Workshop	Within 4 weeks of the completion of the Task 3.4
4.2	Contractor to provide detailed record of the TWG discussions and use as an update to the draft Consultation Notes (from Task 3)	Within 3 weeks after the approval of the revised outline by the WAM
4.3	Use TWG to update and identify additional data sources and vulnerability mapping approaches. The meeting notes should highlight key discussions at the TWG meeting and should ultimately contribute to an update of existing mapping projects.	All vulnerability mapping updates shall be submitted by the Contractor within 2 weeks after the date of the TWG Workshop.
Task 5	**A draft Summary Report shall be prepared**	
5.1	Contractor prepares a draft summary to evaluate health impacts based on a local-to-national-scale aggregation of relevant vulnerability indicators. The paper shall summarize the one-on-one interviews and the TWG Workshop to identify and collect climate projections, spatially-resolved data on human health impacts, demographic and other socioeconomic data, land-use/ land-cover data to facilitate a comparison across locations, and appropriate climate stressor mapping overlays. An internal review draft (IRD) will be prepared by the Contractor for the WAM's review. The contractor will respond to the WAM's comments in a separate spreadsheet and prepare an external review draft (ERD) Summary Report.	Anticipated date for completion is FY 2016 Q4

VIII. MANAGEMENT CONTROLS

1. All deliverables shall be reviewed for conformance to the requirements of this work assignment before being approved as final.

2. The contractor shall comply with other applicable requirements for final work assignment reports stipulated in contract.

IX. NOTICE REGARDING GUIDANCE PROVIDED UNDER THIS PROJECT

Guidance is strictly limited to technical and analytical support. The contractor shall not engage in activities of an inherent governmental nature such as the following:

(1) Formulation of Agency policy
(2) Selection of Agency priorities
(3) Development of Agency regulations

Should the contractor receive any instruction from an EPA staff person that the contractor ascertains to fall into any of these categories or goes beyond the scope of the contract or work assignment, the contractor shall immediately contact the PO, WAM or CO.

X. SPECIAL CONDITIONS AND ASSUMPTIONS

The contractor shall hold a conference call with the EPA WAM at the initiation of the work assignment, and shall provide a bi-weekly update to the WAM by telephone for the duration of the work assignment, in addition to the standard reporting requirements of the contract.

XI. EPA CONTACT INFORMATION

Copies of all correspondence pertaining to the performance of this work assignment shall be sent to the WAM.

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Alternate Work Assignment Manager (WAM):

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EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-81

☐ Other ☒ Amendment Number: 000001

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2016 Base Option Period Number 2	Map vulnerability

Contractor	Specify Section and paragraph of Contract SOW
ICF INCORPORATED, L.L.C.	A, A2d,A3,B1,C1,C4,D,E,F

Purpose:
- ☐ Work Assignment
- ☒ Work Assignment Amendment
- ☒ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 11/12/2015 To 10/31/2016

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1										
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Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 11/01/2013 To 10/31/2016	$29,955.00	237
This Action:	$23,091.00	192
Total:	$53,046.00	429

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 01/27/2016	$23,091.00	192
Cumulative Approved:	$53,046.00	429

Work Assignment Manager Name: Janet Gamble (Signature) (Date)		Branch/Mail Code: Phone Number: 703-347-8617 FAX Number:
Project Officer Name: Melissa Revely-Wilson (Signature) (Date)		Branch/Mail Code: Phone Number: 919-541-0207 FAX Number:
Other Agency Official Name (Signature) (Date)		Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: William Gatlin (Signature)	2/09/2016 (Date)	Branch/Mail Code: Phone Number: 513-487-2852 FAX Number: 513-487-2107

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-82

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2016	WET Data
	Base Option Period Number 2	

Contractor	Specify Section and paragraph of Contract SOW
ICF INCORPORATED, L.L.C.	B.1, B.5, C.1

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 11/13/2015 To 10/31/2016

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (*Max 2*) ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period: 11/01/2013 To 10/31/2016 — Cost/Fee: — LOE:

This Action:

Total:

Work Plan / Cost Estimate Approvals

Contractor WP Dated: — Cost/Fee: — LOE:

Cumulative Approved: — Cost/Fee: — LOE:

Work Assignment Manager Name John Fox (Signature) (Date)	Branch/Mail Code: Phone Number 703-347-8598 FAX Number:
Project Officer Name Melissa Revely-Wilson (Signature) (Date)	Branch/Mail Code: Phone Number: 703-347-8523 FAX Number: 703-347-8696
Other Agency Official Name (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name Adam Meier (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2852 FAX Number: 513-487-2107

PERFORMANCE WORK STATEMENT
CONTRACT NO. EP-C-14-001
WA 2-82

TITLE: WET Data

Principal Section & Paragraph of SOW: B.1, B.5, C.1

PERIOD OF PERFORMANCE: November 13, 2015 – October 31, 2016

I. PURPOSE

The purpose of the work assignment is to provide services to the U.S. Environmental Protection Agency's (EPA) National Center for Environmental Assessment (NCEA), Office of Research and Development (ORD), specifically to transfer data from pdf reports to an electronic spreadsheet format. Accuracy of the data transfer is very important. The pdf reports are reports of Whole Effluent Toxicity (WET) testing conducted by various facilities in California. The data will be used by EPA to quantify WET test variability and to evaluate the statistical error rate for EPA's Test of Significant Toxicity (TST).

II. BACKGROUND

U.S. Environmental Protection Agency's (EPA) National Center for Environmental Assessment (NCEA), Washington Division, is providing assistance to EPA Region 9 regarding statistical methods applied to WET test data. These data will be used to characterize variability of one test species and endpoint (the chronic *Ceriodaphnia dubia* reproduction) and to characterize the error rate of a statistical procedure applied to the biological reproduction endpoint. It is essential that entered data be verified carefully. However, it is assumed that the data printed in the reports that EPA provides to ICFI are accurate (they have been certified under NPDES reporting requirements).

Data was provided in the form of reports submitted to the California State Water Resources Board by various facilities that discharge effluent under NPDES permits. Data come from ten discharge facilities with a varying number of reports (each for a different test date) for each facility. These reports are in PDF format. Each pdf report should correspond to one test date. The reports include tables produced by commercial database software (CETIS) designed for analyzing and reporting results from WET testing. Each report may include results from a number of tests, from effluents and sometimes "ambient" (receiving) water. EPA needs only the results from one type of test (Ceriodaphnia reproduction test) conducted with the effluent. Thus, the data entry task will require locating the pertinent table in each pdf report.

III. SCOPE OF WORK: TASKS AND DELIVERABLES

Work Plan and Quality Assurance Project Plan (QAPP)

The contractor shall prepare a Work Plan and a Quality Assurance Project Plan (QAPP). The Work Plan shall state that the QAPP will be observed during the conduct of this work assignment. The Contractor shall develop a QAPP for approval by the COR and EPA Quality Assurance Manager that shall be submitted simultaneously with the Work Plan for approval. The QAPP shall outline the approach and measures the Contractor will implement to ensure a high standard of quality for data and all deliverables. The QAPP shall be in conformance with EPA's *Requirements for Quality Assurance Project Plans* (EPA QA/R-5). Guidance for developing the

QAPP can be found in: *Guidance for Quality Assurance Project Plans* (EPA QA/G-5), available online at http://www.epa.gov/quality/qa_docs.html. The contractor shall not perform any work under the other tasks of this Project until the contractor receives a signature page from EPA for the QAPP, showing approvals by the Work Assignment Manager, the contract Project Officer, and NCEA's QA official.

Deliverables: QAPP
Due Date: 20 days after issuance of this Performance Work Statement (PWS).

Task 1. Data Entry and Data QA

Enter and verify reproduction data for the chronic Ceriodaphnia test, reproduction endpoint, and only for the effluent sample in each pdf report. Data must be 100% accurate.

Please arrange a telephone conference after reviewing the materials and before starting to enter data.

The specific CETIS table is headed "CETIS Summary report" in the upper left page margin (header). The required data appear on page 2 of the summary table. The heading within the table reads "Reproduction Detail." If the "CETIS Summary Report" is absent, use the "Reproduction Detail" table from the "CETIS Analytical Report". If you find PDFs that differ from this description, you will need to discuss it with the EPA WAM.

The data consist of counts of number of "neonates" (offspring). Columns are labeled by replicate number (e.g. "Rep 1"). Rows are labeled by dilution (concentration of effluent). If there are two types of control (identified in column "Control Type"), enter data for both types. True zeros will be reported, and must be entered, as numeric zeros. Blanks in the CETIS report should be entered as blanks or "NA" – blanks in CETIS signify "missing" data.

Data Elements
(these may be changed using written technical direction, after discussion with the contractor; changes might require a revised cost estimate)

a. Table of "Reproduction Detail" (neonate counts) with page number of table
b. Control Type (e.g., EPA moderately hard water)
c. Test Code (in upper right page margin)
d. Start Date (on first page of CETIS Summary Report)
e. Laboratory (reported in first line of a table at the top)
f. Facility Name (corresponds to folder and file names)
g. Report Month (corresponds to file names)

*Notes: Laboratory may be the same for all tests at one facility (probably is, but not verified for all facilities). Laboratory and facility are repeated elements that can be copied across tests from the same facility (but must be verified). When the CETIS Summary report is absent, Sample Date might be identified in the cover letter (it is not found on the CETIS Analytical Report).

Data structures for delivery to EPA

The data structures and methods or software used to enter and arrange data are matters for the contractor to decide. The following lines address the formatting of data to be delivered to EPA.

Data should be delivered as an Excel spreadsheet or an R data frame, one for each discharger (facility).

Data for each facility should be structured as a flat file with columns for year, Month, Test Date, Test Code, Control Type, Concentration (%), Replicate numbers (1-10). The cell entries would then be Reproduction values (Neonate counts). Thus, for a given WET test (unique Test Code and Test date), replicates would be arrayed as ten columns across the same row. (It would also be acceptable to have each replicate on a separate row if that is more efficient).

As an example:

Year	Month	TestDate	TestCode	ControlType	Conc%	rep1	rep2	rep3	...	rep10
2014	1	1/12/2014	SMI024.0cf	Receiving Water	0	24	21	31	…	18
2014	1	1/12/2014	SMI024.0cf	Mod Hard Water	0	24	21	31	…	22
2014	1	1/12/2014	SMI024.0cf		25	28	32	35	…	38

……..

(for concentrations > 0, Control Type can either be a blank or text "NA"

Deliverables: Data structures and formats as described above
Due Dates: 20 work days (excluding weekends and holidays) after receipt of data; this may be changed by written technical direction.

V. SCHEDULE OF DELIVERABLES

This schedule and the deliverables dates specified under each Task above may be changed using written Technical Direction.

Task	**Schedule** (all days are elapsed calendar days unless otherwise stated)
Work Plan and Quality Assurance Project Plan	20 days after receipt of this PWS
Task 1 - Data Entry and QA	20 work days (excluding weekends and holidays) after receipt of data; this may be changed using written technical direction

VI. NOTICE REGARDING GUIDANCE PROVIDED UNDER THIS PROJECT

Guidance is strictly limited to technical and analytical support. The contractor shall not engage in activities of an inherently governmental nature such as the following:

(1) Formulation of Agency policy
(2) Selection of Agency priorities
(3) Development of Agency regulations

Should the contractor receive any instruction from an EPA staff person that the contractor ascertains to fall into any of these categories or goes beyond the scope of the contract or work assignment, the contractor shall immediately contact the PO or WAM.

The contractor shall also ensure that work under this work assignment does not contain any apparent or real personal or organizational conflict of interest. The contractor shall certify that none exist at the time the proposal is submitted to EPA. The Contractor shall be responsible for obtaining a conflict of interest certification for any subcontractor services.

VII. SPECIAL CONDITIONS AND ASSUMPTIONS

The contractor shall provide regular updates on progress and any issues that need to be resolved to the WAM by telephone or by email. Any technical directions made during informal discussions shall be issued promptly by the EPA WAM in writing (to include email).

VIII. EPA CONTACTS

EPA Work Assignment Manager (WAM)

John Fox
703-347- 8598 (voice), 703-347-8690 (fax), email Fox.John@epa.gov
Mailing Address:
U.S. EPA, ORD/NCEA-Washington (Mail Code 8623P)
1200 Pennsylvania Ave, NW, Washington, D.C. 20460

Courier Deliveries:
U.S.E.P.A. Office of Research and Development, National Center for Environmental Assessment
Two Potomac Yard North, 7th Floor N-7954, 2733 S. Crystal Drive, Arlington, VA 22202

Alternate EPA Work Assignment Manager

Sue Norton
703-347-8549 (voice), email Norton.Susan@epa.gov

Mailing and courier addresses as above for WAM, except mail code

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-82

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2016 Base Option Period Number 2	WET data

Contractor	Specify Section and paragraph of Contract SOW
ICF INCORPORATED, L.L.C.	B.1, B.5, C.1

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [X] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 11/13/2015 To 10/31/2016

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
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Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 11/01/2013 To 10/31/2016	$0.00	0
This Action:	$14,199.00	218
Total:	$14,235.00	218

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 12/02/2015	$14,199.00	218
Cumulative Approved:	$14,235.00	218

Work Assignment Manager Name: John Fox	(Signature)	(Date)	Branch/Mail Code: Phone Number: 703-347-8598 FAX Number:
Project Officer Name: Melissa Revely-Wilson	(Signature)	(Date)	Branch/Mail Code: Phone Number: 919-541-0207 FAX Number:
Other Agency Official Name	(Signature)	(Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: William Yates	(Signature)	2/09/2016 (Date)	Branch/Mail Code: Phone Number: 513-487-2852 FAX Number: 513-487-2107

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignn.ent Number: 2-83

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2016 Base Option Period Number 2	Assess Impact PED Internal

Contractor: ICF INCORPORATED, L.L.C.

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 11/01/2015 To 10/31/2016

Comments:

[ ] Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): [ ]

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period: 11/01/2013 To 10/31/2016 — Cost/Fee: — LOE:

This Action:

Total:

Work Plan / Cost Estimate Approvals

Contractor WP Dated: — Cost/Fee: — LOE:

Cumulative Approved: — Cost/Fee: — LOE:

Work Assignment Manager Name: Karen Herbin-Davis (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-0857 FAX Number:
Project Officer Name: Melissa Revely-Wilson (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-0207 FAX Number:
Other Agency Official Name (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: William Yates (Signature) 8/16/16 (Date)	Branch/Mail Code: Phone Number: 513-487-2055 FAX Number:

PERFORMANCE WORK STATEMENT 2-83
Contract EP-C-14-001

TITLE: Assessing Impact of IVIV Scaling Factor Variability in Pediatric Populations on Measures of Internal Exposure Using PBPK Modeling

PERIOD OF PERFORMANCE:

CONTRACTING OFFICER REPRESENTATIVE (COR):

Karen Herbin-Davis
US EPA / NHEERL-RTP
B105-03, RTP, NC 27711
Phone: (919) 541-0857
Fax (919) 541-4284
Herbin-davis.karen@epa.gov

(Alt COR): Michael F. Hughes
US EPA / NHEERL-RTP
B105-03, RTP, NC 27711
Phone: (919) 541-2160
Fax (919) 541-4284
Hughes.michaelf@epa.gov

I. PURPOSE

The purpose of this PWS is to assist EPA in evaluating the impact of *in vitro* to *in vivo* (IVIV) scaling factor variability in pediatric populations on measures of internal exposure using PBPK modeling. The estimated level of effort for this work is described in Tasks 1-4. In all areas of work, application of models, and methods development, the technical expert shall provide to the COR written technical direction for the contractor, as needed, to assist in the quality assurance of the modelling effort, and to ensure that the information resources are compatible with EPA's computer based information systems and specifications.

In order to improve EPA's ability to provide quality assurance (QA) and quality control (QC) for PBPK models, it is important that documentation of all QA processes and any changes in the model code or scripts be thorough and complete. Comments shall be added to model files and scripts as necessary and the full electronic record shall include the entire model workspace in Acslx, copies of Excel or other ancillary files which contain simulation data, and a summary word document which logs the QA activities, process, and results.

II. BACKGROUND

Many physiologically based pharmacokinetic (PBPK) models include values for metabolic rate parameters extrapolated from *in vitro* metabolism studies using scaling factors such as mg of microsomal protein per gram of liver (MPPGL) and liver mass (FVL). Variation in scaling factor values impacts metabolic rate parameter estimates (Vmax) and hence estimates of internal

dose used in dose response analysis. The impacts of adult human variation in MPPGL and FVL on estimates of internal dose have previously been assessed using a human PBPK model for bromodichloromethane (BDCM) for multiple biomarkers of exposure and internal dose for a variety of household water use scenarios. The purpose of this work is to extend this analysis to pediatric populations.

III. STATEMENT OF WORK

A. Objective

The purpose of this PWS is to evaluate the impact of in vitro to in vivo (IVIV) scaling factor variability in pediatric populations on biomarkers of exposure and internal dose using PBPK modeling for some common household water use scenarios for the disinfection by-product, BDCM. This is an extension of work already conducted in adult humans using BDCM as a model chemical.

B. Tasks

Task 1: Work Plan - Review of Model Code and Scoping of Work

The contractor shall review all provided model code, associated scripts and other documentation pursuant to accomplishment of tasks 2-4 and provide an evaluation consisting of any technical clarifications necessary to complete the work, provisional schedule, level of effort and related documentation. The COR will provide the model code and related scripts, and various data needed to complete the analysis. Since the exact start dates are not yet known, the time to completion should be described as the number of days or weeks from the start of a particular task.

The contractor shall provide expertise in PBPK model analysis, evaluation, and development.

Task 2: Pediatric Model Parameterization and Testing

The COR shall provide from the technical expert source references for pediatric physiological parameters and raw data for scaling factors to be used, as well as example model scripts containing relevant parameters and test files. The contractor shall develop analogous pediatric scripts for model parameterization and testing and conduct such testing. Testing shall include evaluation of mass balance.

The contractor shall provide an interim report detailing any technical issues encountered during the course of Task 2.

Task 3: Monte Carlo and Exposure Scenario Analysis with Sensitivity Analysis

The COR will provide from the technical expert example scripts for exposure scenarios, Monte Carlo analyses, and local sensitivity analysis. The contractor shall develop analogous scripts to allow for Monte Carlo analysis according to provided household exposure scenarios and related sensitivity analysis for specified model parameters and model responses. The contractor shall

perform Monte Carlo analysis for specific household exposure scenarios using specified model parameters and model responses.

The contractor shall provide an interim report detailing any technical issues encountered during the course of Task 3.

Task 4: Final Report

The contractor shall provide a final report that includes a summary of the work performed during the contract period, and any suggestions or comments for new initiatives, new resources, or future work to enhance assessment of the impact of IVIVE scaling factor variability in pediatric populations.

The final report shall include sections consistent with research reports including both methods, (e.g., parameter tables) and results (both tabular and graphical) as well as documentation of all QA processes and any changes in the model code or scripts. The full electronic record shall include the complete model workspace from acslx software, copies of Excel or other ancillary files which contain data generated in model simulations, a summary word document which logs the QA activities, process, and results. The report shall be provided in MS Word format, via email.

IV. SCHEDULE OF DELIVERABLES

Item / Task – Description	**Estimated Deliverable Date**
Task 1 - ***Review of Model Code and Scoping of Work***	15 Calendar Days from Initiation of PWS
Task 2 - ***Pediatric Model Parameterization and Testing***	25 Calendar Days from Initiation of PWS
Task 3 – ***Monte Carlo and Exposure Scenario Analysis with Sensitivity Analysis***	45 Calendar Days from Initiation of PWS
Task 4 – ***Final Report***	Three weeks prior to the completion of this PWS

V. MANAGEMENT CONTROLS

1. The contractor shall certify there is no conflict of interest. The contractor shall provide the following conflict of interest certification in the workplan:

I certify that, to the best of my knowledge and belief, no actual, apparent, or potential organizational or individual conflicts of interest related to this Work Assignment exist. Personnel, who perform work under this Work Assignment, or relating to the Work Assignment, have been informed of their obligation to report personal and organizational interests. All actual, apparent or potential organizational or individual conflicts of interest related to this Work Assignment have been reported to the Contracting Officer (CO) and Project Officer (PO) or are attached, if applicable.

2. The contractor shall be responsible for obtaining a conflict of interest certification for any subcontractor services.

3. All deliverables shall be reviewed for conformance to the requirements of this PWS before being approved as final.

VII. NOTICE REGARDING GUIDANCE PROVIDED UNDER THIS WORK ASSIGNMENT

Guidance is strictly limited to technical and analytical support. The contractor shall not engage in activities of an inherent governmental nature such as the following:

(1) Formulation of Agency policy
(2) Selection of Agency priorities
(3) Development of Agency regulations

Should the contractor receive any instruction from an EPA staff person that the contractor ascertains to fall into any of these categories or goes beyond the scope of the contract or Work Assignment, the contractor shall immediately contact the COR.

The contractor shall also ensure that work under this PWS does not contain any apparent or real personal or organizational conflict of interest. The contractor shall certify that none exist at the time the proposal is submitted to EPA.

VIII. SPECIAL CONDITIONS AND ASSUMPTIONS

In addition to the standard reporting requirements of the contract, the contractor shall hold a conference call with the COR at the initiation of the PWS and shall subsequently discuss with the COR by telephone or e-mail, as needed, any technical issues that might impact the successful completion of the objectives of this PWS.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-83

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2017 Base Option Period Number 2	Assessing Imipact of IVIV Scal

Contractor: ICF INCORPORATED, L.L.C.

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [X] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 11/01/2015 To 10/31/2016

Comments:
Assessing Impact of IVIV Scaling Factor Variability in Pediatric Population on Measures of Internal Exposure Using PBPK Modeling

[ ] Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (*Max 2*): [ ]

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
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Authorized Work Assignment Ceiling

	Contract Period	Cost/Fee	LOE
	11/01/2013 To 10/31/2017	$0.00	0
This Action:		$20,415.00	228
Total:		$20,996.74	228

Work Plan / Cost Estimate Approvals

		Cost/Fee	LOE
Contractor WP Dated:	09/06/2016	$20,415.00	228
Cumulative Approved:		$20,996.74	228

Work Assignment Manager Name: Karen Herbin-Davis (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-0857 FAX Number:
Project Officer Name: Melissa Revely-Wilson (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-0207 FAX Number:
Other Agency Official Name (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: William Yates (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2055 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-84

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2016 Base Option Period Number 2	Webinar to Obtain Peer Input

Contractor	Specify Section and paragraph of Contract SOW
ICF INCORPORATED, L.L.C.	A. Assessment Issues and Documents

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 11/01/2015 To 10/31/2016

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
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Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 11/01/2013 To 10/31/2016		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Jennifer Richmond-Bryant (Signature) (Date)		Branch/Mail Code: Phone Number: 919-541-4518 FAX Number:
Project Officer Name: Melissa Revely-Wilson (Signature) (Date)		Branch/Mail Code: Phone Number: 919-541-0207 FAX Number:
Other Agency Official Name (Signature) (Date)		Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: William Yates (Signature) 1/26/2016 (Date)		Branch/Mail Code: Phone Number: 513-487-2055 FAX Number:

PERFORMANCE WORK STATEMENT
CONTRACT NO. EP-C-14-001
WA 2-84

TITLE: Webinar to Obtain Peer Input on Draft Materials for the Integrated Science Assessment for Particulate Matter (PM)

Principal Section & Paragraph of SOW: A. Assessment Issues and Documents

PERIOD OF PERFORMANCE: CO Approval – October 31, 2016

I. PURPOSE

The purpose of this work assignment is to provide administrative and logistical support for a webinar, planned during June, 2016, to the U.S. Environmental Protection Agency's (hereinafter EPA or Agency) National Center for Environmental Assessment (NCEA). This work assignment is consistent with the purpose and scope of Contract EP-C-14-001.

II. BACKGROUND

Sections 108 and 109 of the Clean Air Act require periodic review and, if appropriate, revisions of the national ambient air quality standards (NAAQS) and the air quality criteria on which they are based. EPA held a kickoff science and policy workshop to initiate a review of the Primary (health-based) and Secondary (welfare-based) NAAQS for particulate matter (PM) in February, 2015. Subsequent to the workshop, EPA is developing an integrated review plan that will outline the schedule, process, and key policy-relevant issues that will generally be used to frame the science assessment, risk/exposure assessment, and policy assessment documents. These documents will provide the foundation to inform Agency decision-makers throughout the review of the PM NAAQS.

As part of the initial development of the Integrated Science Assessment (ISA), EPA and external authors prepare draft sections on discipline-specific topics related to ambient concentrations, exposure, health effects, and ecological effects of PM. Prior to integration of the sections and evaluation of the weight of evidence, EPA solicits input from subject matter experts on the scope and content of these draft sections. EPA plans to hold a webinar with up to 4 sessions for this purpose during June, 2016, during which invited experts shall be asked to comment on draft ISA sections related to their area of expertise. Each session may be up to 4 hours in length, and sessions may occur on different dates. The webinar shall be online only and shall be hosted at EPA's main Research Triangle Park facility. The webinar discussions will be considered as the Agency finalizes the 1st External Review Draft ISA.

III. STATEMENT OF WORK

A. Objective

The overall objective of this work assignment (WA) is to provide administrative and logistical support for the webinar described above. The goal of the webinar is to solicit input and comment from subject matter experts on draft sections of the ISA for PM. Invited experts shall be expected to (1) read the draft materials, (2) provide

written comments prior to the webinar, (3) participate in discussions in the webinar regarding the scope and content of the draft ISA sections, and (4) submit final written comments. The webinar discussions shall provide important input as EPA considers how to integrate evidence across disciplines and evaluate the weight of evidence regarding health and ecological effects. Each session shall have a panel, consisting of several experts (EPA or non-EPA) from the subject area being discussed, which may include air quality, exposure assessment, toxicology, epidemiology, and ecology. The webinar shall have an expected attendance of approximately 100 participants. Administrative and logistical support shall consist of the following tasks:

B. Specific Requirements (Tasks)

1. A kick-off meeting shall be held (in person and/or by phone) not to exceed 1 hour between the Contractor and the EPA Work Assignment Manager (WAM) to clarify or address questions. The contractor shall maintain communication with the WAM through weekly phone calls or email updates.

2. Identify and contact non-federal experts with broad knowledge and expertise in the areas of air quality, exposure assessment, toxicology, epidemiology, and ecology with the goal of recruiting approximately 15-20 of these experts to participate in the webinar. The webinar is planned for June, 2016, based on availability of the participants, and subject to approval by the WAM. Arrange logistical support (e.g., webinar access) and appropriate compensation (e.g., honoraria) for the time and effort of the non-federal experts. Potential invitees shall be asked to submit a bio-sketch for assessing their qualifications and must be approved by the WAM.

3. Compile draft PM ISA sections provided by EPA and format them for distribution to the panelists. Formatting shall include checking bibliographic citations, section numbers, figure and table numbers, and other basic features to facilitate readability. The Contractor shall provide formatted sections to EPA for review and technical direction approximately one week prior to the deliverable due date. Upon approval by EPA, the Contractor shall send the materials to the panelists.

4. Set up a website for online registration and webinar material availability for panelists as well as other EPA and non-EPA attendees.

5. Each invited expert shall be asked to submit written comments on the draft ISA materials they receive approximately one week prior to the peer-input webinar. The Contractor shall compile the written comments and circulate them to EPA and other panelists approximately one week prior to the webinar.

6. Prepare and make available electronic copies of webinar materials, including registration lists and other registration materials (preliminary and final agendas will be provided by EPA.) Coordinate presentation of the material (e.g., PowerPoint presentations). The Contractor shall provide draft materials to the WAM for review and technical direction approximately one week prior to the deliverable due date.

7. Provide assistance (including onsite assistance) to EPA at the time of the webinar. This includes providing on-site staff throughout the length of the webinar to host it and coordinate with facility staff during planning, set-up, implementation, and closeout of the event and to assist webinar participants, as appropriate.

8. Compile and maintain mailing list and final attendance list of all attendees, both EPA and non-EPA. Update attendee list at the end of the webinar. Compile final written comments from each of the panelists. Provide other 'close out information' including hours used, other expenses, etc.

V. SCHEDULE OF DELIVERABLES

Deliverables	**Due Dates**
1. Initial contact (listed above) shall be performed	Within 3 days of award
2. Invite and confirm experts for participation in panel discussions.	February 29, 2016
3. Send formatted draft ISA materials to panelists.	May 13, 2016
4. Establish website for online registration and webinar materials.	May 13, 2016
5. Compile written comments on draft ISA material from the panelists.	Approximately one week prior to the webinar
6. Make webinar materials available to the panelists and attendees.	Approximately one week prior to the webinar
7. Provide onsite and other logistical assistance for the webinar.	Date of the webinar
8. Submit final list of registered attendees, electronic version of presentation materials, any materials submitted by presenters at or following the webinar, and panelists' final written comments.	Approximately three weeks after the webinar

VI. Notice Regarding Guidance Provided Under this Project

Guidance is strictly limited to technical and analytical support. The contractor shall not engage in activities of an inherent governmental nature such as the following:

(1) Formulation of Agency policy
(2) Selection of Agency priorities
(3) Development of Agency regulations

Should the contractor receive any instruction from an EPA staff person that the contractor ascertains to fall into any of these categories or goes beyond the scope of the contract or work assignment, the contractor shall immediately contact the PO or WAM.

VII. Special Conditions and Assumptions

The contractor shall hold a conference call with the EPA WAM at the initiation of the work assignment, and shall provide a weekly update to the WAM by telephone or email for the duration of the work assignment, in addition to the standard reporting requirements of the contract.

Travel: Any non-local travel directly chargeable to this work assignment shall be submitted and approved by the Project Officer prior to the travel (see contract clause Local LC-31-08, Approval of Contractor Travel). It is expected that the Contractor will be requested to participate in a 3-day webinar in the Research Triangle (NC) area on dates to be determined.

EPA GREEN MEETING REQUIREMENTS: When soliciting quotes or offers for meeting and conference services on behalf of the EPA, the Contractor shall follow the contract EPAAR clause 1552.223-71, EPA Green Meetings and conferences. More information about EPA's Green Meetings initiative may be found on the internet at http://www.epa.gov/oppt/greenmeetings/.

VIII. EPA CONTACT INFORMATION

Copies of all correspondence pertaining to the performance of this work assignment shall be sent to the PO.

Work Assignment Manager (WAM)
Jennifer Richmond-Bryant, PhD
919-541-4518
richmond-bryant.jennifer@epa.gov

Alternate WAM
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EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-84

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2017 Base Option Period Number 2	Webinar

Contractor: ICF INCORPORATED, L.L.C.

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [X] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 11/01/2015 To 10/31/2016

Comments:
Webinar Materials for the Integrated Science Assessment for Particulate Matter (PM)

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (*Max 2*): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
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Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 11/01/2013 To 10/31/2017	$0.00	0
This Action:	$42,471.00	354
Total:	$42,471.00	354

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 02/15/2016	$42,471.00	354
Cumulative Approved:	$42,471.00	354

Work Assignment Manager Name: Jennifer Richmond-Bryant (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	919-541-4518
	FAX Number:	
Project Officer Name: Melissa Revely-Wilson (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	919-541-0207
	FAX Number:	
Other Agency Official Name (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	
	FAX Number:	
Contracting Official Name: William Yates (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	513-487-2055
	FAX Number:	

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-85

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2016 Base Option Period Number 2	ORD Wildfire Workshop

Contractor: ICF INCORPORATED, L.L.C.

Specify Section and paragraph of Contract SOW: E. Risk Assessment Support - Meetings

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 11/01/2015 To 10/31/2016

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
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5										

Authorized Work Assignment Ceiling

	Contract Period:	Cost/Fee:	LOE:
	11/01/2013 To 10/31/2016		
This Action:			
Total:			

Work Plan / Cost Estimate Approvals

Contractor WP Dated:	Cost/Fee	LOE:
Cumulative Approved:	Cost/Fee	LOE:

Work Assignment Manager Name: Patricia Mcghee	(Signature)	(Date)	Branch/Mail Code: Phone Number: 919-541-2607 FAX Number:
Project Officer Name: Melissa Revely-Wilson	(Signature)	(Date)	Branch/Mail Code: Phone Number: 919-541-0207 FAX Number:
Other Agency Official Name	(Signature)	(Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: William Yates	William Yates (Signature)	6-14-2016 (Date)	Branch/Mail Code: Phone Number: 513-487-2055 FAX Number:

PERFORMANCE WORK STATEMENT
CONTRACT NO. EP-C-14-001
WA 2-85

TITLE: Integrating Social Science Perspective in Formulation of Risk Communication Strategies within Communities impacted by wildfire smoke.

Principal Section & Paragraph of SOW: **E. Risk Assessment Support – Meetings**

I. PURPOSE:

The purpose of this Work Assignment is to provide administrative and logistical/facilitation support services for a one and a half day stakeholder workshop. This workshop will be held in the in Research Triangle Park, NC in September 2016 at the US EPA facility. This work assignment is consistent with the purpose and scope of Contract EP-C-14-001.

II. BACKGROUND:

Large wildfires are increasing in frequency and intensity, and more fires mean more smoke. As changes in global climate exacerbate factors contributing to increased frequency of fires (e.g., drought), there is a raised concern within the affected communities over associated health impacts and also among EPA, CDC, and public health professionals.

EPA recognizes that understanding and communicating the risks associated with wildfire smoke are complex problems involving diverse stakeholders and multiple scientific disciplines. Well formulated strategies for communicating risks are considered to be those that result in measurable improvement of public health impacts during wildfire smoke episodes. We propose an interdisciplinary workshop that will integrate social and natural science perspectives to 1) formulate the problems and challenges in risk communication and risk management faced by communities during smoke events, 2) identify opportunities for integration of solutions within current technological possibilities, 3) develop potential hypotheses related to risk communication and risk management that can be tested through interdisciplinary research approaches.

The workshop will bring together social scientists, including sociologists, behavioral scientists, psychologists, risk assessors, risk communicators, and potentially others, with air quality experts, epidemiologists, forestry scientists, climate change scientists, and community and institutional stakeholders. We will utilize appropriate social science expertise to engage community stakeholders within areas frequently affected by large fires together with scientific experts around the topics of air quality, climate change, medicine, public health, risk communication, and user interface/user experience

of communication tools. Engagement between social scientists, natural scientists, and community stakeholders within the workshop is a critical step toward understanding the nature of the problem of wildfire smoke exposures and associated public health impacts, and in developing improved communication of risks that takes advantage of scientific and technological advances related to wildfire smoke characterization. The overall goal is that through collaboration between social and natural scientists and engagement with communities, we will develop a research framework based on a shared understanding of the nature of the public health problem that reflects community needs and produces measurable improvements in public health.

III. STATEMENT OF WORK:

A. Objective:

The overall objective of this work assignment (WA) is to provide administrative and logistical support for one meeting in the form of a workshop. Support will include the development of a platform for participant registration and access to meting materials, travel coordination and planning for meeting participants, onsite meeting support, communication activities related to the meeting and coordinating an evaluation mechanism to solicit feedback from workshop participants. The workshop date is September 22nd and the morning of the 23rd. EPA anticipates having approximately 60 workshop participants. This work assignment does not include logistical support related to securing a facility or any meeting rooms. EPA has or will reserve its own meeting room space for these workshops. Administrative and logistical support shall consist of the following tasks:

B. Specific Requirements (Tasks):

1. The Contractor shall prepare a written work plan describing how the tasks in this SOW will be performed, including a schedule, budget, level of effort, and qualifications of personnel. To facilitate timely preparation of the work plan, a kick-off meeting shall be held (in person and/or by phone) between the Contractor and WAM to clarify or address questions. The contractor shall maintain communication with the EPA WA Manager (WAM) through weekly phone calls or email updates. The EPA Contract Officer shall be notified when expenditures approach 75% of the funded dollar value of the Work Assignment (WA).

2. A kick-off meeting shall be held (in person and/or by phone) between the Contractor and WAM to clarify or address questions. The contractor shall maintain communication with the EPA WA Manager (WAM) through weekly phone calls or email updates.

3. Pre-meeting support: Administrative and logistical support services for workshop planning may include:

    - Maintain a list of invited, confirmed and declined participants.
    - Provide participants local information about hotels, restaurants, directions, transportation (airport, airport transportation, etc).

- Arrange transportation, lodging, and logistical support for up to10-15 invited non-federal participants, as required.
- Develop a method or platform for confirmed participants to register and get materials prior to the meeting.
- Preparing folders for distribution to attendees at registration including final agenda, meeting roster, survey for participants to fill out, name badges and other meeting materials.
- Working with EPA's onsite facility staff to ensure meeting rooms have AV equipment including microphone, laptop computer, projectors, screen, flip charts, tape, markers etc.

4. Onsite Logistical Support and Reporting

- Providing staff to support the workshop onsite.
- Managing the registration table to ensure participants sign in, receive the meeting materials and handle any problems workshop participants may encounter.
- Update attendee list at the end of the workshop (remove no-shows, add walk-ins).
- Providing on-site liaison services to work with facility staff to trouble-shoot any problem situations related to AV support or break-out room set-up.

IV. SCHEDULE OF DELIVERABLES

The following table provides a complete list of required work assignment tasks that are to be completed as part of this contract.

Work Assignment Task	Required Completion Date
Prepare a written work plan	Per contract requirements
Generate pool of candidates to invite and decide distribution of expertise for travel	Within 2 weeks of award
Prepare registration and material distribution mechanism/platform	Within 2 weeks of award
Update mechanism/platform with materials	Within 2 weeks of award and post meeting
Submit electronic copies of final participant list;	Two working days before the workshop and status updates on registration leading up to events.
Submit updated and final list of registered attendees, electronic version of presentation materials, and any materials submitted by presenters prior to or following the meeting.	Ten working days following workshop.

V. Notice Regarding Guidance Provided Under this Project

Guidance is strictly limited to technical and analytical support. The contractor shall not engage in activities of an inherent governmental nature such as the following:

(1) Formulation of Agency policy
(2) Selection of Agency priorities
(3) Development of Agency regulations

Should the contractor receive any instruction from an EPA staff person that the contractor ascertains to fall into any of these categories or goes beyond the scope of the contract or work assignment, the contractor shall immediately contact the PO or WAM.

VI. Special Conditions and Assumptions

The contractor shall hold a conference call with the EPA WAM at the initiation of the work assignment, and shall provide a weekly update to the WAM by telephone or email for the duration of the work assignment, in addition to the standard reporting requirements of the contract.
Travel: Any non-local travel directly chargeable to this work assignment shall be submitted and approved by the Project Officer prior to the travel (see contract clause Local LC-31-08, Approval of Contractor Travel). It is expected that the Contractor will be requested to participate in a 2-day workshop in the Research Triangle (NC) area on dates to be determined.

EPA GREEN MEETING REQUIREMENTS: When soliciting quotes or offers for meeting and conference services on behalf of the EPA, the Contractor shall follow the contract EPAAR clause 1552.223-71, EPA Green Meetings and conferences. More information about EPA's Green Meetings initiative may be found on the internet at http://www.epa.gov/p2/green-meetings.

VII. EPA CONTACT INFORMATION

Copies of all correspondence pertaining to the performance of this work assignment shall be sent to the PO.

Work Assignment Manager (WAM)
Patricia McGhee
919-541-2607
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Weiss.Sherry@epa.gov

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-85

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2017 Base Option Period Number 2	Wildfire Smoke Workshop

Contractor: ICF INCORPORATED, L.L.C.

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [X] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 11/01/2015 To 10/31/2016

Comments:

[ ] Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (*Max 2*): [ ]

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
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Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 11/01/2013 To 10/31/2017	$0.00	0
This Action:	$30,551.00	202
Total:	$30,551.00	202

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 07/05/2016	$30,551.00	202
Cumulative Approved:	$30,551.00	202

Work Assignment Manager Name: Patricia Mcghee (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-2607 FAX Number:
Project Officer Name: Melissa Revely-Wilson (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-0207 FAX Number:
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: William Yates (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2055 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-86

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2016 Base X Option Period Number	Dust & Soil Ingestion Study

Contractor: ICF INCORPORATED, L.L.C.

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 11/01/2015 To 10/31/2016

Comments:
WA 2-86, Study Design Support for a Dust & Soil Ingestion Study. This is a new work assignment. The effective date of the new work assignment shall be the date of issuance by the Contracting Officer. The Contractor shall supply a work plan / cost estimate no later that 20 days from the effective date of the

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
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4										
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Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 11/01/2013 To 10/31/2016		0
This Action:		1,374
Total:		1,374

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Nicolle Tulve (Signature) (Date)		Branch/Mail Code: Phone Number: 919-541-1077 FAX Number:
Project Officer Name: Melissa Revely-Wilson (Signature) (Date)		Branch/Mail Code: Phone Number: 919-541-0207 FAX Number:
Other Agency Official Name (Signature) (Date)		Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: William Yates William Yates (Signature) 2/09/2016 (Date)		Branch/Mail Code: Phone Number: 513-487-2055 FAX Number:

PERFORMANCE WORK STATEMENT
CONTRACT NO. EP-C-14-001
WA 2-86

TITLE: Study Design Support for a Dust and Soil Ingestion Study

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Specify Section & Paragraph SOW: III.C.

PERIOD of PERFORMANCE: CO approval through 10/31/2016.

I. PURPOSE.

The purpose of this work assignment is for the U.S. Environmental Protection Agency's (EPA), Office of Research and Development (ORD), National Center for Environmental Assessment (NCEA) and National Exposure Research Laboratory (NERL) to obtain support for the design of a potential study to estimate dust and soil ingestion rates among various age groups of children (0-<1 month; 1-<3 months; 3-<6 months; 6-<12 months; 1-<2 years; 2-<3 years; 3-<6 years; 6-<11 years; 11-<16 years; 16-<21 years) and adults in the U.S.

II. BACKGROUND AND OBJECTIVES.

Dust and soil ingestion are important pathways of exposure to certain environmental contaminants, especially for children. Assessing exposure via these pathways requires information on dust and soil ingestion rates. There are three approaches for estimating dust and soil ingestion rates, as reported in the scientific literature: tracer studies, activity pattern studies, and biokinetic modeling comparison studies. Tracer studies estimate dust and soil ingestion based on measurements of tracer elements present in dust and soil from children's residences and/or play areas, and the children's feces. Activity pattern studies combine information on hand-to-mouth and object-to-mouth activities with assumptions about transfer of dust and soil to hands and from hands to mouth and other exposure factors (e.g., frequency of hand washing) to derive dust and soil ingestion estimates. Micro-activity information is usually obtained using observational techniques (e.g., videography, direct observation) or from survey responses (e.g., questionnaires). Biokinetic modeling comparison studies compare direct measurements of a biomarker (e.g., blood or urine levels of a toxicant) with predictions from a biokinetic model (e.g., IEUBK). The comparison of the model predicted blood lead levels with actual blood lead levels can be used to confirm the data inputs on dust and soil intake rates. The available dust and soil ingestion data based on these three study types are reviewed in detail in EPA's *Exposure Factors Handbook: 2011 Edition*[1], but the data are limited and ingestion rates are not available for all child-specific age ranges (0-<1 month; 1-<3 months; 3-<6 months; 6-<12 months; 1-<2 years; 2-<3 years; 3-<6 years; 6-<11 years; 11-<16 years; 16-<21 years). In addition, the contribution that dust makes to the total intake is not adequately characterized. Therefore, ORD is considering the collection of additional data to fill critical data gaps using the tracer and/or activity pattern approaches. The initial phase of this project consisted of a feasibility assessment for a dust and soil ingestion study, which was conducted under WA 1-64. In continuation, the purpose of this new work assignment is to obtain support to design a study to collect data in order to estimate dust and soil ingestion rates for children and adults.

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1 EPA/600/R-09/052F; and Moya, J. and Phillips, L. (2014) A review of soil ingestion studies for children. J Expos Sci Env Epidem, 24: 545-554.

III. STATEMENT OF WORK.

The contractor shall be responsible for completion of ten tasks. A summary of each task is provided below, including the time frame during which the task shall be completed.

Task 1. The contractor shall establish initial communication, submit a work plan, and arrange for routine updates for the EPA Contracting Officer's Representative (COR).

The contractor shall schedule an initial conference call with the EPA COR **within 1 week** after receipt of the work assignment to discuss any questions that ICF may have before submitting the work plan.

Deliverable 1: The contractor shall arrange a conference call with the COR **within 1 week after receipt of the work assignment.**

Task 2. The contractor shall arrange a conference call to discuss the technical basis of this task with EPA.

EPA ORD has established a team of scientists to work on the development of a study design for a dust and soil ingestion study. The contractor shall organize a meeting between these EPA ORD scientists and the ICF contractor(s) working on this work assignment to discuss the scope of the project. The contractor(s) shall familiarize themselves with the final deliverables from work assignment 1-64 prior to the meeting. **Within 2 weeks after Work Plan approval,** the contractor shall arrange for a conference call with the EPA COR and the EPA ORD scientists working on the study design to discuss the scope of this work assignment.

Deliverable 2: The contractor shall arrange a conference call **within 2 weeks after Work Plan approval**.

Task 3. The contractor shall develop an outline for the dust and soil ingestion study design.

The contractor shall develop an outline for the study design document. The study design outline shall address design considerations for incorporating both the tracer and activity pattern methodologies. It shall include, but not be limited to, topics such as rationale and background, justification, objectives, strengths and limitations of the proposed study, sample size and representativeness, target population(s) and recruitment methods, study location(s), eligibility, recruitment, multimedia measurement plan, target analytes and justification for the selection of those analytes, data analysis plan, considerations for the protections of human subjects (included as an appendix), sample collection procedures, sample analysis, data security and confidentiality, statistical analysis of the data and data reporting methods, quality assurance, and references. It shall also address both pilot and full study implementation phases. Information from the statistical analysis that was conducted under work assignment 1-64 of this contract to estimate the number of participants and the types and numbers of samples needed shall be incorporated into the study design, as appropriate. The contractor shall submit the draft outline for the study design **within 2 weeks after completing Task 2.** The contractor shall submit the final outline **within 2 weeks of receiving comments on the draft outline from the COR.**

Deliverable 3a: The contractor shall submit the draft outline **within 2 weeks after completing Task 2.**

Deliverable 3b: The contractor shall submit a final outline **within 2 weeks of receiving comments on the draft outline from the COR.**

Task 4. The contractor shall develop the study design document.

The contractor shall develop a draft study design document based on the outline prepared in Task 3. The study design document shall include detailed descriptions of all design elements identified in the outline. The contractor shall provide the internal review draft study design document **within 8 weeks of completing Task 3.** An external review draft study design shall be submitted to the COR **within 4 weeks after receiving comments from the EPA COR on the internal review draft document.**

Deliverable 4a: The contractor shall submit to the COR the internal review draft study design **within 8 weeks after receiving EPA concurrence on Task 3.**

Deliverable 4b: The contractor shall submit the external review draft study design document **within 4 weeks of receiving comments from the COR.**

Task 5. The contractor shall develop a Quality Assurance Project Plan for the implementation of the study design.

The contractor shall develop a Quality Assurance Project Plan (QAPP) that documents the quality processes and procedures for implementing the study design developed under Task 4. The contractor shall submit the QAPP for the EPA COR's and QA Manager's approval. The QAPP shall include documentation on quality assurance checks to verify accuracy, completeness, and adherence to established standards and format, and must address data collection and analysis. Guidance for developing EPA G-5 compliant QAPPs that meet EPA specifications prepared for activities conducted by or funded by EPA, are available online at http://www.epa.gov/quality/qa_docs.html, see "EPA Requirements for Quality Assurance Project Plans (QA/R-5)". The contractor shall provide the COR with the draft QAPP **within 4 weeks of completing Task 4.** The final QAPP shall be submitted to the COR **within 2 weeks of receiving comments on the draft QAPP from the EPA COR and QA Manager.**

Deliverable 5a: The contractor shall provide the COR with the draft QAPP **within 4 weeks of completing Task 4.**

Deliverable 5b: The contractor shall provide the COR with the final QAPP **within 2 weeks of receiving comments from the EPA COR and QA manager.**

Task 6. The contractor shall develop standard operating procedures (SOPs) for the implementation of the study design.

The contractor shall develop SOPs for any multimedia sample that will be collected in the field based on the

study design and QAPP requirements developed under Tasks 4 and 5. The SOPs shall include, but not be limited to, scope and application, summary of method, definitions, cautions, responsibilities, materials and reagents, procedures, records, quality control and quality assurance, references, and chain of custody record. The SOPs shall be drafted in an approved ORD format and submitted with the draft and final QAPP. It is acceptable for existing SOPs to be adapted for this work, as appropriate. EPA will provide an SOP in an approved format to the contractor to be used as an example.

Deliverable 6a: The contractor shall provide the COR with the draft SOPs at the same time as the draft QAPP.

Deliverable 6b: The contractor shall provide the COR with the final SOPs at the same time as the final QAPP.

Task 7. Implementation Plan for the study design.

The contractor shall develop a draft implementation plan to accompany the study design document. The draft implementation plan will contain sufficient detail to ensure successful execution of the study design. The elements found in the draft implementation plan will match the elements found in the final study design. If appropriate, the implementation plan details may be incorporated into the study design, so that only one document is submitted.

Deliverable 7a: The contractor shall provide the COR with a draft implementation plan **within 4 weeks of completing Task 4.**

Deliverable 7b: The contractor shall provide the COR with a final implementation plan **within 2 weeks of receiving comments from the EPA COR on deliverable 7a.**

Task 8. Recruitment materials.

The contractor shall develop draft recruitment materials based on the recruitment strategy included in the study design. The draft recruitment materials may include, but are not limited to, flyer advertisements, public service announcements, and other materials that would interest potential participants in participating in the study.

Deliverable 8a: The contractor shall provide the COR with draft recruitment materials **within 4 weeks of completing Task 7.**

Deliverable 8b: The contractor shall provide the COR with final recruitment materials **within 2 weeks of receiving comments from the EPA COR on deliverable 8a.**

Task 9. Questionnaire

The contractor shall develop a draft questionnaire to be used in the potential study. The questions in the questionnaire will be included because they support the multimedia samples being collected. The questionnaire will be used to collect demographic information and data needed to allocate participants' time between indoor

and outdoor locations. Additional topics to be included in the questionnaire are those pertaining to the likelihood of dust and soil intake (e.g., hand washing frequency, thumb-sucking, and behaviors that might indicate pica). The contractor shall review available questionnaires that have been used in previous dust and soil ingestion studies, as needed, to identify other relevant topics and questions that should be included. EPA will provide examples of questionnaires and a list of important aspects for consideration. In addition to the draft questionnaire, the contractor shall develop a summary document that explains the justification, source, and previous use of the question, if applicable.

Deliverable 9a: The contractor shall provide the COR with a draft questionnaire **within 4 weeks of completing Task 8.**

Deliverable 9b: The contractor shall provide the COR with a final questionnaire **within 2 weeks of receiving comments from the EPA COR on deliverable 9a.**

Task 10. Final Study Design

The peer review of the external review draft submitted under Task 4 will be conducted by EPA under a separate contract with an independent panel of experts. Once the external peer review is conducted and comments are received, the contractor shall review the external peer review comments within 2 weeks of receipt and arrange a conference call with the EPA COR to discuss the comments and answer questions. The contractor shall incorporate external peer review comments into the study design and produce a 1) final study design and 2) response to comments document for EPA clearance within 6 weeks after the conference call with the EPA COR. In consultation with the EPA COR, more time may be allowed if comments are more significant than originally expected. The response to comments document shall summarize how external peer review comments were addressed in the final study design. The contractor shall address any comments resulting from the EPA clearance process within 1 week of receipt of those comments.

Deliverable 10a: Arrange for conference call with EPA COR **within 1 week of receipt of external peer review comments**.

Deliverable 10b: Produce a final study design and response to comments document **within 6 weeks of completing the conference call with the EPA COR**.

The contractor shall furnish electronic copies of (or internet links to) any references or other materials obtained in the preparation of the deliverables for this work assignment.

IV. TIME TABLE.

Task	Deliverable	Time frame
1	Establish initial communication	Within 1 week after receipt of work assignment
2	Hold conference call with EPA staff and contractor	Within 2 weeks of Work Plan approval
3a	Submit draft outline	Within 2 weeks of completing Task 2

3b	Submit final outline	Within 2 weeks of receiving comments from COR
4a	Submit draft study design document	Within 8 weeks of COR concurrence on Task 3
4b	Submit final study design document	Within 4 weeks of COR comments
5a	Submit draft QAPP	Within 4 weeks of completing Task 4
5b	Submit final QAPP	Within 2 weeks of COR and QA manager comments
6a	Submit draft SOPs	At the same time as the draft QAPP
6b	Submit final SOPs	At the same time as the final QAPP
7a	Submit draft implementation plan	Within 4 weeks of completing Task 4
7b	Submit final implementation plan	Within 2 weeks of receiving comments on Task 7a
8a	Submit draft recruitment materials	Within 4 weeks of completing Task 7
8b	Submit final recruitment materials	Within 2 weeks of completing Task 8a
9a	Submit draft questionnaire	Within 4 weeks of completing Task 8
9b	Submit final questionnaire	Within 2 weeks of completing Task 9a
10a	Hold conference call	Within 1 week of external peer review comments
10b	Submit final study design and response to comments document	Within 6 weeks of completing Task 10a

1. The contractor shall be responsible for obtaining a conflict of interest certification for any subcontractor services.

2. All deliverables shall be in conformance with the requirements of the work assignment before such deliverables are approved as final. Electronic copy of all deliverable shall be sent to the EPA Project Officer (PO).

3. The contractor shall comply with other applicable requirements for final work assignment reports as stipulated in the Contractual Agreement.

4. The contractor shall prepare all deliverables in accordance with the Quality Management Plan for the contract.

V. NOTICE REGARDING GUIDANCE PROVIDED UNDER THIS TASK ORDER.

Guidance is strictly limited to technical and analytical support. The contractor shall not engage in activities of an inherent governmental nature such as the following:

(1) Formulation of Agency policy
(2) Selection of Agency priorities
(3) Development of Agency regulations

If the contractor receives any instructions from an EPA staff person that the contractor ascertains to fall into any of these categories or goes beyond the scope of the contract or work assignment, the contractor shall immediately notify the COR. The contractor shall also ensure that work under this Work Assignment does not contain any apparent or real personal or organizational conflict of interest. The contractor shall certify that no

conflicts exist at the time the proposal is submitted to the EPA.

VII. EPA CONTACT INFORMATION.

Copies of all correspondence pertaining to the performance of this work assignment shall be sent electronically to the COR.

Work Assignment Manager	**Alternate WAM**
NICOLLE TULVE US EPA OFFICE OF RESEARCH AND DEVELOPMENT NATIONAL EXPOSURE RESEARCH LABORATORY 109 TW ALEXANDER DR. MD-E-205-04 RESEARCH TRIANGLE PARK, NC 27711 (919)541-1077 (919)541-0905 FAX TULVE.NICOLLE@EPA.GOV	LINDA PHILLIPS US EPA OFFICE OF RESEARCH AND DEVELOPMENT NATIONAL CENTER FOR ENVIRONMENTAL ASSESSMENT 1200 PENNSYLVANIA AVE. NW MC-8623P WASHINGTON DC 20460 (703)347-0366 (703)347-8690 FAX PHILLIPS.LINDA@EPA.GOV

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-86

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2016	Dust & Soil Ingestion Study
	Base Option Period Number 2	

Contractor: ICF INCORPORATED, L.L.C.

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [X] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 11/01/2015 To 10/31/2016

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (*Max 2*): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 11/01/2013 To 10/31/2016	$0.00	0
This Action:	$106,226.00	864
Total:	$106,226.00	864

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 02/29/2016	$106,226.00	864
Cumulative Approved:	$106,226.00	864

Work Assignment Manager Name: Nicolle Tulve (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-1077 FAX Number:
Project Officer Name: Melissa Revely-Wilson (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-0207 FAX Number:
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: William Yates (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2055 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-86

☐ Other ☒ Amendment Number: 000001

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2017 Base Option Period Number 2	Dust and Soil Ingestion Study

Contractor: ICF INCORPORATED, L.L.C.

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☒ Work Assignment Amendment
- ☐ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☒ Incremental Funding

Period of Performance: From 11/01/2015 To 10/31/2016

Comments:

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

SFO (*Max 2*): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 11/01/2013 To 10/31/2017	$0.00	0
This Action:	$59,226.00	551
Total:	$165,452.00	1,415

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 02/29/2016	$59,226.00	551
Cumulative Approved:	$165,452.00	1,415

Work Assignment Manager Name: Nicolle Tulve (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-1077 FAX Number:
Project Officer Name: Melissa Revely-Wilson (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-0207 FAX Number:
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: William Yates (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2055 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-88

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2016 Base Option Period Number 2	Multipollutant for the NAAQS

Contractor: ICF INCORPORATED, L.L.C.

Specify Section and paragraph of Contract SOW: D. Analysis, Document and Issue Paper Preparation

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 11/01/2015 To 10/31/2016

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (*Max 2*): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee:	LOE:
Contract Period: 11/01/2013 To 10/31/2016		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Nicole Hagan (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-3153 FAX Number:
Project Officer Name: Melissa Revely-Wilson (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-0207 FAX Number:
Other Agency Official Name (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: William Yates (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2055 FAX Number:

I. TITLE: Multipollutant Evidence for the National Ambient Air Quality Standards

II. WORK ASSIGNMENT CONTRACT OFFICER REPRESENTATIVES (WA COR):

Work Assignment Manager (WAM):
Nicole Hagan (mail code C504-06)
Ambient Standards Group
Health and Environmental Impacts Division
U.S. EPA, OAQPS
Research Triangle Park, NC 27711
Telephone: (919) 541-3153

Alternate Work Assignment Manager:
Randy Waite (mail code C504-04)
Ambient Standards Group
Health and Environmental Impacts Division
U.S. EPA, OAQPS
Research Triangle Park, NC 27711
Telephone: (919) 541-5447

III. LEVEL OF EFFORT

Duration: 6 months
Completion Date: October 31, 2016

IV. BACKGROUND

Sections 108 and 109 of the Clean Air Act require periodic review and, if appropriate, revisions of the national ambient air quality standards (NAAQS) and the air quality criteria on which they are based. The purpose of this work assignment is to identify, recruit and manage qualified scientists to review, evaluate and compile currently available scientific information to inform our understanding of multipollutant health impacts, including impacts in at-risk groups. This information will be considered within the context of the NAAQS reviews, informing both our understanding of the potential policy implications of multipollutant exposures and our quantitative analyses of risks and exposures. This work assignment shall be conducted for the U.S. Environmental Protection Agency (hereinafter the EPA or Agency) Health and Environmental Impacts Division (HEID) and is consistent with the purpose and scope of Contract EP-C-14-001.

V. STATEMENT OF WORK

The WAM is authorized to provide technical direction to the Contractor in accordance with the terms of the contract. The Contractor shall not duplicate any work previously performed. The Contractor shall perform the following tasks:

Task 1: Establish Communications and Work Plan

Subtask 1a: Establish Communications
Within 7 days of award of this WA, the Contractor shall schedule a conference call (not to exceed 1 hour) with the WAM and appropriate contractor staff to clarify outstanding questions and confirm the schedule and specific tasks. The Contractor shall maintain communication with the WAM through weekly phone calls and/or email updates.

Subtask 1b: Work Plan
The Contractor shall develop a work plan proposing a technical approach to address the Tasks within this WA. The Contractor shall provide the work plan to the WAM for review and approval prior to the beginning of work. The Contractor shall provide monthly progress reports to the WAM after approval of the work plan to review progress of this WA.

Task 2: Multipollutant Evidence and Integrative Report

Subtask 2a: Identify, Recruit, and Manage Expert Authors
The Contractor shall identify, recruit and manage expert scientists, as needed, for Subtasks 2b and 2c to identify, characterize, and integrate the scientific evidence that contributes to an understanding of how multiple pollutants (including at least one criteria pollutant) contribute to specific health outcomes, and the degree to which one can distinguish a specific pollutant's contribution from a multipollutant contribution for these effects. Given the diversity of the scientific evidence to be reviewed, at least two expert scientists will be needed as authors to review evidence for (1) controlled human exposure and animal toxicological evidence, and (2) for epidemiologic evidence. These expert scientists should have experience working on issues related to criteria pollutants and the NAAQS. The Contractor shall submit a bio-sketch or resume for each prospective author to the WAM for approval prior to beginning work on Subtask 2b. The Contractor shall be responsible for ensuring communication between the WAM and the authors so that technical clarification can be offered and interaction between authors can occur as needed. The Contractor shall also ensure that the deliverables are provided to the WAM in a timely manner.

Subtask 2b: Categorize Epidemiological and Experimental Multipollutant Studies by Health Endpoint
The Contractor and/or expert scientists shall use the epidemiological and experimental EndNote libraries provided by the WAM (approximately 6500 epidemiological references and 11500 experimental references) to categorize literature by health endpoints, including: cardiovascular, respiratory, mortality, and other. The Contractor and/or expert scientists shall work with the WAM to develop the appropriate search terms for the epidemiological and experimental studies for each endpoint: cardiovascular, respiratory, and mortality. The Contractor and/or expert scientists shall provide the search terms for each health endpoint to the WAM prior to categorizing the studies. The Contractor and/or expert scientists shall provide the final search terms and a tally of the number of studies by health endpoint for epidemiological and experimental studies upon completion of this subtask.

Subtask 2c: Screen Epidemiological and Experimental Studies to Identify Relevant Multipollutant Studies

For each health endpoint, the Contractor and/or expert scientists shall perform an initial screen of the EndNote libraries from task 2b to identify the studies that are multipollutant studies (e.g., using a title screen). The purpose of this is to remove any studies that are, based on the Contractor and/or expert scientists' judgment, not health-based multipollutant epidemiological or experimental studies. The Contractor and/or expert scientists shall categorize studies for each health endpoint as "yes" (i.e., studies that do evaluate the potential for health effects due to multipollutant exposures), "maybe" (i.e., studies that may evaluate the potential for health effects due to multipollutant exposures, but for which a definitive answer is not possible based on a title screen), or "no" (i.e., studies that do not evaluate the potential for health effects due to multipollutant exposures). For each health endpoint, the Contractor and/or expert scientists shall further evaluate the studies (e.g., through review of the abstract and methods) identified as "yes" and "maybe" in order to definitively identify 1) epidemiological studies that include multipollutant analyses (e.g., joint pollutant; analyses of effect modification) and 2) experimental studies that evaluate effects due to simultaneous or sequential multipollutant exposures. Upon completion of this subtask, the Contractor and/or expert scientists shall provide a tally of the number of studies, by health endpoint and separately for epidemiological and experimental studies, which were categorized as yes, maybe, and no.

Subtask 2d: Tabulate Epidemiological and Experimental Multipollutant Study Information

The Contractor and/or expert scientists shall extract and tabulate study-specific information for the studies resulting from the evaluation in Subtask 2c for each health endpoint. Tabulated information shall include, at a minimum, the study citation, the HERO identification number, the location of the study, the years of the study, the pollutants included in the study, and the health endpoint(s) considered. The Contractor shall work with the WAM to identify the information to be included in study tables, and to develop study tables, prior to beginning work on Subtask 2d. The Contractor and/or expert scientists shall provide the epidemiological study table and the experimental table to the WAM upon completion of this subtask and prior to beginning work on Subtask 2e.

Subtask 2e: Tabulate Epidemiological and Experimental Multipollutant Effect Study Information

The Contractor and/or expert scientists shall work with the WAM to identify the studies compiled in Subtask 2d to be considered in Subtask 2f. For those studies identified to be included in Subtask 2f, the Contractor and/or expert scientists shall extract and tabulate study-specific information. For the epidemiological studies, the study-specific details to be extracted from the studies could include, but are not limited to, the study citation, the HERO identification number, the location of the study, the years of the study, the pollutants included in the multipollutant analyses, the health endpoint(s) evaluated, and the results of both single pollutant and multipollutant analyses. For experimental data, the study specific details to be extracted could include, but are not limited to, the study

citation, the HERO identification number, study subject characterization, pollutant combinations evaluated, exposure protocol, health endpoints evaluated, and results of both single pollutant and multipollutant exposure analyses. The Contractor and/or expert scientists shall work with the WAM to identify the information to be included in study tables, and to develop study tables, prior to beginning work on Subtask 2f. The Contractor and/or expert scientists shall provide the epidemiological study table and the experimental table to the WAM upon completion of this subtask and prior to beginning work on Subtask 2f.

Subtask 2f: Prepare Written Reports on the Epidemiological and Experimental Evidence of Multipollutant Exposures to Criteria Pollutants

Based on the studies identified in task 2e, the Contractor shall provide written, integrative reviews of the results of epidemiologic and experimental studies of multipollutant exposures to combinations of criteria pollutants or to combinations of criteria pollutants and non-criteria air pollutants. The Contractor shall provide written outline(s) to the WAM for review prior to beginning the written integrated review. The Contractor shall participate in telephone meetings as needed with the WAM. The Contractor shall develop a draft and a final report to be reviewed and approved by the WAM.

VI. DELIVERABLES:

Task	Deliverable	Due Date
1	**Establish Communications and Work Plan**	
1a	Establish communications	Within 7 days of effective date of WA
1b	Work plan	Within 21 days of effective date of WA
2	**Multipollutant Evidence and Integrative Report**	
2a	Identify, recruit and manage expert authors	May 31, 2016
2b	- Final search terms for health endpoints - Tally of epidemiological and experimental studies by endpoint	July 1, 2016
2c	Tally of epidemiological and experimental studies by endpoint categorized as yes, maybe, no criteria	July 1, 2016
2d	Tables for epidemiological and experimental studies determined to be multipollutant studies	August 1, 2016
2e	Tables describing epidemiological and experimental studies determined to evaluate multipollutant health effects	September 1, 2016
2f	- Draft written reports integrating epidemiological and experimental multipollutant evidence - Final written reports integrating epidemiological and experimental multipollutant evidence	October 1, 2016 October 21, 2016

VII. REPORTING REQUIREMENTS

All reports shall be submitted in accordance with the contract specifications. In addition, the Contractor shall prepare all deliverable reports in Microsoft Word 2013. Any spreadsheet deliverables shall be delivered in Microsoft Excel 2013. The Contract shall submit an electronic copy of all deliverables to the WAM by email. The contractor shall ensure that all deliverables are free from computer viruses and spyware.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-89

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2016 Base Option Period Number 2	Literature search - stream ...

Contractor	Specify Section and paragraph of Contract SOW
ICF INCORPORATED, L.L.C.	G. Literature Search

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 05/01/2016 To 10/31/2016

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee:	LOE:
Contract Period: 11/01/2013 To 10/31/2016		0
This Action:		258
Total:		258

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE:
Contractor WP Dated:		
Cumulative Approved:	*Cost/Fee*	*LOE:*

Work Assignment Manager Name: Michael Griffith (Signature) (Date)		Branch/Mail Code: Phone Number: 513-569-7034 FAX Number:
Project Officer Name: Melissa Revely-Wilson (Signature) (Date)		Branch/Mail Code: Phone Number: 919-541-0207 FAX Number:
Other Agency Official Name (Signature) (Date)		Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: William Yates William Yates (Signature)	4/28/16 (Date)	Branch/Mail Code: Phone Number: 513-487-2055 FAX Number:

PERFORMANCE WORK STATEMENT
CONTRACT NO. EP-C-14-001
WA 2-89

TITLE: Literature Search - Stream Restoration: Scale and Success

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Specify Section & Paragraph SOW:
G. Literature Search

PERIOD OF PERFORMANCE: CO approval through 10/31/2016

I. PURPOSE

The objectives of the work described in this PWS are to:

1. Conduct a search of the published, peer reviewed literature on stream restoration research identifying descriptions of projects that include:
    a. the stressors being remediated and their source(s);
    b. the restoration that was conducted;
    c. monitoring to assess any physiochemical changes and changes to one or more biotic assemblages (i.e., fish, macroinvertebrates, periphyton, etc.) resulting from the restoration; and
    d. whether the restoration was considered successful or not.
2. The literature search should particularly focus on papers where the source of the stressors is urbanization; agriculture, including livestock grazing; channel alterations; and dams (i.e., removal)
3. An electronic copy of each citation will be obtained and each citation will be annotated with how it meets the four lettered criteria above.

II. BACKGROUND

EPA is seeking a greater understanding of watershed resiliency and recovery potential. Part of this understanding will include an assessment of how the scale of the environmental stressors affecting impaired stream systems (e.g., the magnitude, duration, and timing of the stressors) is mitigated by the restoration process, which in turns determines the success of a restoration. Frequently, mitigation in stream systems undergoing restoration does not match the stressor affecting the stream. For instance, restoration is conducted to ameliorate a local-scale phenomenon (e.g., lack of woody debris and other reach-scale habitat), while the more distal effect is not mitigated (e.g., high amount of impervious surface in the watershed). This disconnect between the scale of impact and the response can lead to poor realization of recovery potential. The output of this research will provide an annotated bibliography of the literature where impact (at scale) can be assessed, as well as analyses and syntheses of the effect of the restoration (and ways in which the recovery potential of the system could be improved). In addition, a framework to guide identifying the recovery potential of watersheds and/or watershed components will be produced.

III. STATEMENT OF WORK

Task 1: Establish Communication

Within 3 days of start date of this WA, the Contractor shall schedule a conference call (not to exceed 1 hour), with the Work Assignment Contract Officer Representative (WA-COR) and appropriate contractor staff to clarify outstanding questions and confirm the schedule and specific tasks.

Task 2: Work Plan, Staffing Plan, Call Schedule, and Quality Assurance Project Plan (QAPP)

The Contractor shall prepare a Technical Work Plan describing how the work outlined in this Performance Work Statement will be performed, including deliverables, a schedule (including regular calls), budget, and level of effort. The Contractor shall also prepare a Staffing Plan, which shall be submitted as part of the Work Plan that shows assigned personnel by task and the qualifications of the proposed personnel. The Contractor shall provide expertise in the basic science areas required to complete this WA.

The Contractor shall develop a QAPP for approval by the WA-COR and Quality Assurance Manager. The Contractor must address in the QAPP how they are going to consider the use of secondary data to carry out this task. Secondary data are defined as environmental or health data that were developed for a different purpose. This includes data used from citations found in the literature. See these documents: "EPA Manual C/0 2105-P-01-0: EPA Quality Manual for Environmental Programs (QAPP)"; "EPA Requirements for Quality Assurance Project Plans (QA/R-5)"; and "Appendix A. Guidance on Quality Assurance Project Plans for Secondary Research Data."

The QAPP shall be submitted simultaneously with the Work Plan for approval, 15 days after award. The Contractor shall not perform any work on subsequent tasks under this WA until the Work Plan and QAPP are reviewed and approved.

Task 3. Conduct Literature Search

A literature and internet search should be conducted starting with keywords, such as "stream" and "restoration", but may include other keywords to expand or limit the search with concurrence from the WA-COR.

1. The search databases will be selected with concurrence from the WA-COR and may include Web of Science and Google Scholar,
2. The search may be limited to literature published since 2000,
3. The search should particularly include multiple studies of steam restoration conducted in watersheds where the source of stressors is urbanization; agriculture, including livestock grazing; channel alterations; or dams (i.e., removal)
4. The results of the literature search may be stored in an EndNote library
5. Literature chosen for further annotation should at minimum include descriptions of:
    a. the stressors being remediated and their source(s);
    b. the restoration that was conducted;
    c. monitoring to assess any physiochemical changes and changes to one or more biotic assemblages (i.e., fish, macroinvertebrates, periphyton, etc.) resulting from the restoration; and
    d. whether the restoration was considered successful or not.
6. Copies (.pdf) of literature chosen for further annotation will be collected in an electronic file. The individual files should be named similar to these examples: GriffithMB2014-FreshwSci (one author), GriffithMB&KravitzM2008-EstuarCoasts (two authors), or GriffithMBetal2009-JAmWaterResAssoc (three or more authors).

Task 4. Annotation of Bibliography

1. Papers that meet the minimum standard and include descriptions of:
    a. the stressors being remediated and their source(s);
    b. the restoration that was conducted;
    c. monitoring to assess any physiochemical changes and changes to one or more biotic assemblages (i.e., fish, macroinvertebrates, periphyton, etc.) resulting from the restoration; and
    d. whether the restoration was considered successful or not.

    should be compiled into a bibliography and annotated.
2. The annotation should abstract the above descriptions a-d along with the page and line number where the descriptions are found in the original text. The annotation may be added the "Research Notes" field of the citation entry in the EndNote library.
3. Each citation entry should include the author's abstract or summary, unless the original journal article does not include an abstract or summary, in the "Abstract" field of the EndNote library.
4. In the "Notes" field of the citation entry in the EndNote library, it should be indicated whether the paper is from a "peer-reviewed journal" or some other source that may not be peer-reviewed.

Task 5. Final Report and Delivery of:

1. The EndNote library including the EndNote library file and the .Data file folder.
2. Electronic folder containing .pdf copies of the annotated papers.
3. Final report summarizing findings for Tasks 3-4, including QA/QC results.

IV. ANTICIPATED DELIVERABLES

All products by the Contractor must be of high quality, written in a clear concise style, with a logical organization and presentation. Deliverables shall be provided to EPA in electronic formats compatible with EPA-supported software (e.g., Excel spreadsheets, Word documents, .pdf files, EndNote files).

V. DELIVERABLES AND SCHEDULE

Task 1. Initial Conference Call	3 days after award of Work Assignment
Task 2. QAPP Call schedule	15 days after award Regular calls throughout WA
Task 3. Conduct Literature Search	20 weeks after award and WA approval
Task 4. Annotation of Bibliography	20 weeks after award and WA approval
Task 5. Final Report Including Delivery of the EndNote library and electronic folder of annotated papers	Draft report due 20 weeks after award and WA approval Final report due 4 weeks after receiving comments from WA-COR on draft report

Note: All days are calendar days.

VI. MANAGEMENT CONTROLS

1. All deliverables shall be reviewed for conformance to the requirements of this work assignment before being approved as final.

2. The contractor shall comply with other applicable requirements for final work assignment reports stipulated in contract.

VII. NOTICE REGARDING GUIDANCE PROVIDED UNDER THIS PROJECT

Guidance is strictly limited to technical and analytical support. The contractor shall not engage in activities of an inherent governmental nature such as the following:

(1) Formulation of Agency policy
(2) Selection of Agency priorities
(3) Development of Agency regulations

Should the contractor receive any instruction from an EPA staff person that the contractor ascertains to fall into any of these categories or goes beyond the scope of the contract or work assignment, the contractor shall immediately contact the PO, WA-COR or CO.

VIII. SPECIAL CONDITIONS AND ASSUMPTIONS

The contractor shall hold a conference call with the EPA WA-COR at the initiation of the work assignment, and shall provide a bi-weekly update to the WA-COR by telephone for the duration of the work assignment, in addition to the standard reporting requirements of the contract.

IX. EPA CONTACT INFORMATION

Copies of all correspondence pertaining to the performance of this work assignment shall be sent to the PO.

Contract Officer Representative and Alternate Contract Officer Representative for Tasks Described Herein for "":

Work Assignment Contract Officer Representative (WA-COR)	**Alternate Work Assignment Contract Officer Representative (Alt WA-COR)**
Name: Michael Griffith	Name: Michael McManus
Office: ORD/NCEA/Cincinnati	Office: ORD/NCEA/Cincinnati
Phone: 513-569-7034	Phone: 513-569-7994
Fax: 513-487-2541	Fax: 513-487-2541
Email: griffith.michael@epa.gov	Email: mcmanus.michael@epa.gov

Appendix A

Quality Assurance Instructions for Contractors Citing Secondary Data

Section 515 of the Treasury and General Government Appropriations Act for fiscal year 2001 directed the Office of Management and Budget (OMB) to issue guidelines to all Federal agencies to ensure and maximize the quality, objectivity, utility, and integrity of the information they disseminate. This law and the OMB guidance subsequently issued in 67 FR 8452 (02/22/02) underscore the need for EPA/NCEA to assess the quality and credibility of the secondary research information cited in its assessment documents.

Secondary research information is defined as information that was originally produced for one purpose but is now being recompiled or reassessed for a different purpose. Secondary research information usually originates from such primary sources as journal articles, books, government and industry reports, databases, and models. The set of processes that follows serves as a guide to evaluate the strength of secondary data gathered from these primary sources.

The Contractors must list the sources for the references cited in his/her document chapters or sections. The source list will include but not be limited to the names of any commercially available or local databases searched by computer or by hand, the search terms and search strategy used, and the time period of the search. List any print sources like books or journal articles which provided references. List any sources of raw data.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-89

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2016	Literature Search
	Base Option Period Number 2	

Contractor: ICF INCORPORATED, L.L.C.

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [X] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 05/01/2016 To 10/31/2016

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (*Max 2*): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 11/01/2013 To 10/31/2016	$0.00	0
This Action:	$22,871.00	298
Total:	$22,871.00	298

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 05/18/2016	$22,871.00	298
Cumulative Approved:	$22,871.00	298

Work Assignment Manager Name: Michael Griffith (Signature) (Date)	Branch/Mail Code: Phone Number: 513-569-7034 FAX Number:
Project Officer Name: Melissa Revely-Wilson (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-0207 FAX Number:
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: William Yates (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2055 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-90

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2016 Base X Option Period Number	Support for Assessment Coordin

Contractor	Specify Section and paragraph of Contract SOW
ICF INCORPORATED, L.L.C.	A.1A (bullet 7) and C.1

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 04/30/2016 To 10/31/2016

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
11/01/2013 To 10/31/2016		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

Contractor WP Dated:	Cost/Fee	LOE:
Cumulative Approved:	Cost/Fee	LOE:

Work Assignment Manager Name: Vicki Soto (Signature) (Date)		Branch/Mail Code: Phone Number: 703-347-0290 FAX Number:
Project Officer Name: Melissa Revely-Wilson (Signature) (Date)		Branch/Mail Code: Phone Number: 919-541-0207 FAX Number:
Other Agency Official Name (Signature) (Date)		Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: William Yates William Yates (Signature) 4/28/16 (Date)		Branch/Mail Code: Phone Number: 513-487-2055 FAX Number:

PERFORMANCE WORK STATEMENT
CONTRACT NO. EP-C-14-001
WA 2-90

TITLE: Technical and Administrative support for Assessment Coordination and Development in NCEA

Specify Section & Paragraph SOW: A.1A (bullet 7) and C.1

PERIOD of PERFORMANCE: Contract Award thru October 31, 2016

I. PURPOSE

The purpose of this new work assignment is to provide services to the U.S. Environmental Protection Agency's (hereinafter EPA or Agency) National Center for Environmental Assessment (NCEA) IRIS Program to evaluate both current program management as well as individual project management activities related to assessment development and production practices, in order to address cross-cutting assessment and organizational issues that impact the development of IRIS assessments. Results will include a written analysis and summary of the current status of program and project management capabilities within the program, recommendations and also implementation of improved process methods and/or tools designed to track and facilitate an increase in the pace of development of multiple ongoing assessments within NCEA.

II. BACKGROUND

The National Center for Environmental Assessment (NCEA), a major component of EPA's Office of Research and Development (ORD), with headquarters in Washington, DC, is EPA's national resource center for human health and ecological risk assessment. NCEA occupies a critical position in ORD between researchers in other parts of ORD and outside of EPA who are generating new findings and data, and the regulators in EPA's program offices and regions who must make regulatory, enforcement, and remedial action decisions. NCEA prepares technical reports and assessments that integrate and evaluate the most up-to-date research and serve as major elements of the science foundation supporting EPA policies. As a result, NCEA plays an important role as a consultant to EPA programs and regions on the use of science in environmental decision making and also influences the direction of environmental research.

III. STATEMENT OF WORK

This work assignment will provide technical and administrative support to NCEA to facilitate tracking, management and production of multiple ongoing assessments.

Task 1: Establish Communication

Within 3 days of the start date of this WA, the Contractor shall schedule a conference call (not to exceed 1 hour) with the WAM and other EPA staff and any appropriate contractor staff to clarify outstanding questions and confirm the schedule of specific tasks. Copies of all correspondence pertaining to the performance of this work assignment shall be sent to the Project Officer.

Task 2: Work Plan and Staffing Plan

The Contractor shall prepare a Technical Work Plan describing how the work outlined in this Performance Work Statement will be performed, including deliverables, a schedule, budget, and level of effort. The

Contractor shall also prepare a Staffing Plan, which shall be submitted as part of the Work Plan that shows assigned personnel by task and the qualifications of the proposed personnel.

Deliverables: Technical Work Plan and Staffing Plan

Task 3: Evaluation of Current Practices for NCEA Management and Coordination of Assessment Activities

The contractor shall work with NCEA management and assessment teams to evaluate current practices and tools for program and project management within the IRIS Program and then prepare an assessment report to summarize their findings. The report should also include recommendations for changes to current practices and tools within IRIS as well as plans for implementing any changes as decided upon by NCEA (see Task 4). In order to facilitate this task, the contractor shall do the following:

- Attend scheduled meetings within the IRIS Program (e.g., IRIS management council meetings, IRIS Division Managers meetings, all-hands science meetings, branch meetings).
- Attend scheduled assessment (project) meetings for two selected chemical/projects (e.g., workgroup meetings, team meetings).
- Conduct on-site interviews with current NCEA management and staff in order to better understand the specific needs of both groups. Interviews should identify impediments to development within ongoing assessments (specific chemicals) as well as impediments to coordination across assessments.
- Propose and attend any other discussions with management and staff that will facilitate report development.
- Develop recommendations for changes to current practices and tools that will increase the pace of assessment management, development, and review including standard project management tools (e.g., integrated master schedule, project risk analysis, stakeholder registry).
- Outline an implementation process for incorporating recommended changes. This process should define the resources and tools needed to facilitate NCEA's ability (at the management level and the assessment team (technical) level) to both manage multiple, on-going assessments and increase the pace of development and review. The implementation process outline should include short-term as well as long-term goals and activities.
- Meet with WAM and NCEA management weekly to discuss progress and challenges. Document meeting minutes including any decision points or resolutions.

In order to accomplish the majority of the activities of this Task, the Contractor(s) should participate in-person in the Potomac Yards NCEA offices.

Deliverables: A written report available to NCEA management 8 weeks after the start of the work assignment.

Task 4: Implementation of Methods to Improve Assessment Activities

Consistent with the written assessment developed in Task 3, proposed changes to practices, modification and/or development of tools, and implementation plans selected by NCEA will be initiated. The contractor will do the following:

- Provide recommendations for staged implementation of new and/or modified methods or approaches for continued improvement in assessment activities.
- Develop or provide tools that will assist in implementation of program or project management activities, and provide training to support implementation of these tools.

- Recommend reporting or tracking processes, and provide training to support implementation of new processes.
- Based on recommendations selected by NCEA, identify, track, and analyze metrics to measure progress towards goals, as changes are implemented in the IRIS Program. Metrics should distinguish between program-wide progress, and progress within assessment teams (project level).
- Provide weekly briefings to NCEA/IRIS management on implementing program/project management activities.
- Meet with WAM and NCEA management weekly to discuss progress and challenges. Document meeting minutes including any decision points or resolutions.

In order to accomplish the majority of the activities of this Task, the Contractor(s) should participate in-person in the Potomac Yards NCEA offices.

Deliverables: Written implementation plans and metrics to measure progress. Tools and training provided to facilitate implementation of program and project management.

IV. ANTICIPATED DELIVERABLES

All products by the Contractor must be of high quality, written in a clear concise style, with a logical organization and presentation. Deliverables shall be provided to EPA in electronic formats compatible with EPA-supported software (e.g., Excel spreadsheets, Word documents, PDFs, InDesign).

V. DELIVERABLES AND SCHEDULE

Task 1: Establish communication	3 days after award of WA and to schedule set
Task 2: Work plan/Staffing plan	15 days after award
Task 3: Written Summary and Assessment	60 days after award
Task 4: Implementation and management tools	150 days after award

VI. MANAGEMENT CONTROLS

1. All deliverables shall be reviewed for conformance to the requirements of this work assignment before being approved as final.

2. The contractor shall comply with other applicable requirements for final work assignment reports stipulated in contract.

VII. NOTICE REGARDING GUIDANCE PROVIDED UNDER THIS PROJECT

Guidance is strictly limited to technical and analytical support. The contractor shall not engage in activities of an inherent governmental nature such as the following:

(1) Formulation of Agency policy
(2) Selection of Agency priorities
(3) Development of Agency regulations

Should the contractor receive any instruction from an EPA staff person that the contractor ascertains to fall into any of these categories or goes beyond the scope of the contract or work assignment, the contractor shall immediately contact the PO, WAM, or CO.

The contractor shall also ensure that work under this work assignment does not contain any apparent or real personal or organizational conflict of interest. The contractor shall certify that none exist at the time the proposal is submitted to EPA.

VIII. SPECIAL CONDITIONS AND ASSUMPTIONS

The contractor shall hold a conference call with the WAM at the initiation of the work assignment. Standard reporting requirements of the contract apply for active/completed projects.

IX. OTHER REQUIREMENTS

The WAM will have oversight on all materials developed by the contractor. The primary communication mechanism between the WAM and the contractor shall be email.

In cases where the work to be performed is of a highly scientific or technical nature or requires consultation or interactions, it may be more expedient for the contractor to interact directly with members of the scientific/technical staff.

X. EPA CONTACT INFORMATION

Copies of all correspondence pertaining to the performance of this WA shall be sent to the PO.

Work Assignment Manager:

Vicki Soto
U.S. EPA/ORD/NCEA
MC 8601-P
1200 Pennsylvania Ave. NW
Washington, DC 20460
soto.vicki@epa.gov
(703) 347-0290

Alternate Work Assignment Manager:

James Avery
U.S. EPA/ORD/NCEA
MC 8601-P
1200 Pennsylvania Ave. NW
Washington, DC 20460
avery.james@epa.gov
(703) 347-8668

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-90

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-14-001	11/01/2013 To 10/31/2016	Tech Admin Support for Assessm
	Base Option Period Number 2	

Contractor: ICF INCORPORATED, L.L.C.

Specify Section and paragraph of Contract SOW: A.1.A and C.1

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [X] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 04/30/2016 To 10/31/2016

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (*Max 2*): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 11/01/2013 To 10/31/2016	$0.00	0
This Action:	$212,183.00	1,714
Total:	$212,183.00	1,714

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 05/25/2016	$212,183.00	1,714
Cumulative Approved:	$212,183.00	1,714

Work Assignment Manager Name: Vicki Soto (Signature) (Date)	Branch/Mail Code: Phone Number: 703-347-0290 FAX Number:
Project Officer Name: Melissa Revely-Wilson (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-0207 FAX Number:
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: William Yates (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2055 FAX Number: